Vol. 910 Number 5

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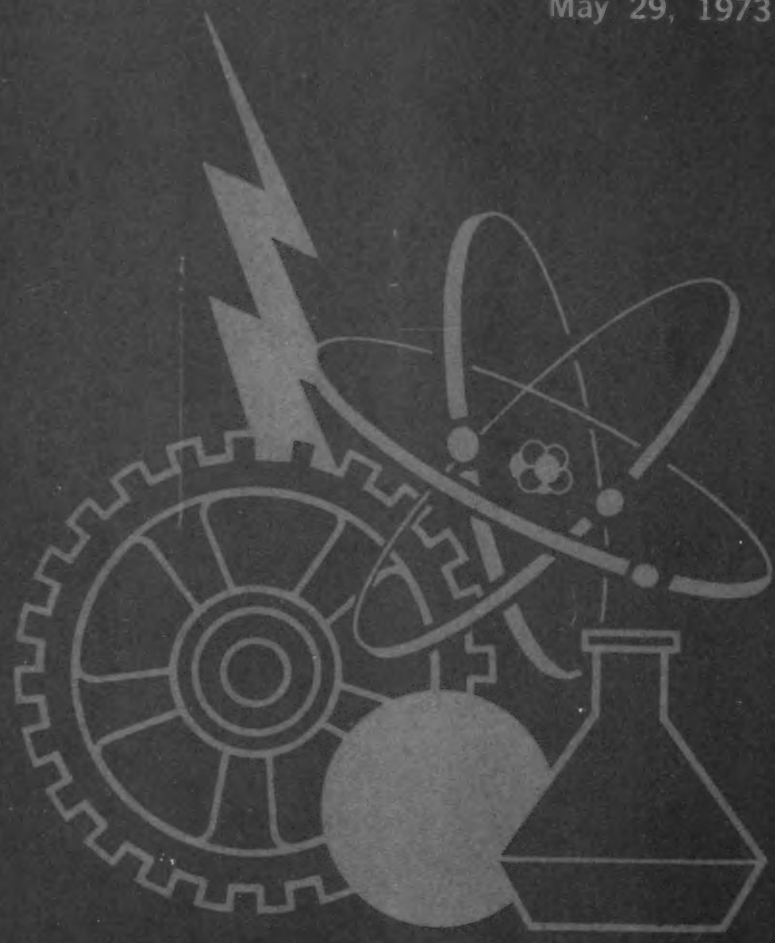
UNITED STATES PATENT OFFICE

PATENTS

May 29, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

May 29, 1973 Volume 910 Number 5

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of March 1973

Examiner affirmed	150
Examiner affirmed in part	20
Examiner reversed	35
Total	205

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,113,277, Casper and McFarland, MULTI-SECTION ASYMMETRICAL COUPLER, **filed** Dec. 18, 1972, D.C., S.D.N.Y., Doc. 72–C–5320, *The Narda Microwave Corp.* v. *Struthers Electronics Corp.*

3,196,692, W. N. Jensen, SHAFT SUPPORT AND DAMPING MEANS, **filed** Jan. 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c62, *Stewart-Warner Corp.* v. *Yazaki Corp., American Yazaki Corp.*

3,222,769, G. R. Le Plae, METHODS OF MAKING STRIP STRUCTURES, **filed** Aug. 4, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1792–ALS, *Essex International Inc.* v. *Trim-Lok Inc. and Lear Siegler Inc.*

3,236,163, Ackerman and Vandenbosch, MEANS FOR LAYING PAVING MATERIAL, **filed** Mar. 3, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c503, *Blaw-Knox Company* v. *Barber-Greene Company.* Decision: Judgment in favor of defendant, July 20, 1972.

3,257,190, Q. F. Soper, METHOD OF ELIMINATING WEED GRASSES AND BROAD LEAF WEEDS, **filed** Oct. 19, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2498–EC, *United States Borax & Chemical Corp., United States Borax Research Corp.* v. *Eli Lilly & Company.*

3,282,469, A. W. Skonberg, HEATED DISPENSING APPARATUS, **filed** Sept. 25, 1972, D.C., W.D. Ky. (Louisville), Doc. 7416–A, *Albert W. Skonberg* v. *General Electric Corp.*

3,298,550, B. D. Schlitz, HAYSTACK TRANSPORTING DEVICE, **filed** Apr. 17, 1972, D.C. S. Dak. (Sioux Falls), Doc. C–72–1020, *Farmhand Inc.* v. *Lahman Manufacturing Co. and Robert Anderson, doing business as Platte Implement.*

3,306,864, Lang, Grazen, and Less, PHENOL FORMALDEHYDE-UREA RESIN COMPONENT BINDER, **filed** Aug. 31, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2120, *Hooker Chemical Corp.* v. *International Mineral & Chemical Corp.*

3,315,464, P. M. Hayden, HEAT-EXCHANGE SYSTEM, **filed** Sept. 22, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2262–AAH, *Dunham-Bush Inc.* v. *Hayden Trans-Cooler Inc.*

3,339,744, A. Ginsberg, TIE RACK, **filed** Oct. 24, 1972, D.C., S.D.N.Y., Doc. 72–C–4519, *Royal London Ltd.* v. *Swank Inc.*

3,341,247, W. W. Martinmaas, TRACTOR CAB, **filed** June 25, 1970, D.C. S. Dak. (Sioux Falls), Doc. C–70–808, *Koehn Manufacturing Inc.* v. *Campbell Supply Co. and Tractor Supply Co.*

3,349,285, N. L. Belkin, SURGICAL GOWN WITH STATIC ELECTRICITY DISCHARGE MEANS, **filed** Oct. 13, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2579, *Angelica Corp.* v. *Opelika Manufacturing Corp.*

3,361,150, J. E. Horner, WATER CONDITIONING CONTROL SYSTEM, **filed** June 10, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–1394–CC, *Universal Interloc Inc.* v. *Hawkins Chemical Co. et al.* Decision: Stipulation for settlement and final judgment (by consent) permanently enjoining defendants. All counterclaims are dismissed with prejudice, Aug. 18, 1972.

3,368,811, B. B. Finney, INTERLOCKING GLOVE AND HANDLE, **filed** July 24, 1972, D.C. (District of Columbia), Doc. 297–72, *Basil B. Finny* v. *National Aeronautics and Space Administration.*

3,417,753, M. Mattler, DISPOSABLE CATHETER AND METHOD FOR FORMING SAME, **filed** Aug. 11, 1972, D.C., E.D. Mich. (Detroit), Doc. 38743, *E-Z-Em Co.* v. *Multi-Med Industries Inc. and Martin Mattler.*

3,439,950, A. Kunevicius, RESILIENT BUMPER STRIP, **filed** July 31, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–789, *Custom Trim Products Inc.* v. *The Standard Products Co.*

3,441,214, D'Avignon and Power, METHOD AND APPARATUS FOR SEEDING CLOUDS, **filed** Sept. 8, 1972, D.C. (District of Columbia), Doc. 343–72, *Weather Engineering Corp. and Weather Engineering Corp. Ltd.* v. *United States of America.*

3,454,280, Harrison and Broughton, GOLF BALLS, **filed** Sept. 19, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2318, *Dunlop Holdings Limited* v. *Ram Golf Corporation.*

3,459,302, D. S. Ross, APPARATUS AND METHOD OF FILTERING SOLIDS FROM A LIQUID EFFLUENT, **filed** Aug. 5, 1969, D.C., N.D. Ohio (Cleveland), Doc. C–69–597, *Hydro-Clear Corporation* v. *Kligler Enterprises Inc., Arthur Kligler, Sylvia Kligler.* Decision: Consent judgment dismissing complaint and counterclaims with prejudice, July 13, 1972. **Same, filed** Aug. 5, 1969, D.C., N.D. Ohio (Cleveland), Doc. C–69–598, *Hydro-Clear Corporation* v. *Union Oil Co., Terrance L. McMichel.* Decision: Consent judgment dismissing complaint and counterclaims with prejudice, July 13, 1972.

3,509,586, William E. Politz, SINK STRAINER MOUNTING MEANS, **filed** Sept. 12, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–958, *Stephen A. Young* v. *Jameco Industries Inc. et al.* Decision: Order dismissing case with prejudice, Jan. 4, 1973.

3,679,512, F. W. Macone, LAMINATED CARD ENVELOPE, **filed** Dec. 26, 1972, D.C. Mass. (Boston), Doc. 72–3892–F, *Avant Incorporated* v. *Polaroid Corporation.*

Certificates of Correction for the Week of May 29, 1973

P.P. 3,252
Re. 27,494
Re. 27,562
D. 225,854
D. 226,059
3,502,712
3,539,616
3,541,465
3,550,735
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National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

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The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

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DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

DEPARTMENT OF COMMERCE

Assistant General Counsel for Administration, Washington, D.C. 20230

Patent 3,611,130. Power Measuring and Leveling System Using a Self-Balancing Bridge. Filed Mar. 17, 1970. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,617,925. Simulator for Atmospheric Radio Noise. Filed June 9, 1970. Patented Nov. 2, 1971. Not available NTIS.

Patent 3,699,518. Method and Machine for Reading Handwritten Cursive Characters. Filed Jan. 18, 1971. Patented Oct. 17, 1972. Not available NTIS.

Patent 3,305,674. Device for Determining an Angle From a Set of Orthogonal Components. Filed Mar. 14, 1966. Patented Feb. 21, 1967. Not available NTIS.

Patent 3,300,066. Sorting Machine Providing Self-Optimizing Inventory Reduction. Filed June 21, 1963. Patented Jan. 24, 1967. Not available NTIS.

Patent 3,281,679. Modulated Subcarrier System for Measuring Attenuation and Phase Shift. Filed May 11, 1965. Patented Oct. 25, 1966. Not available NTIS.

Patent 3,270,189. Device for Determining an Angle From a Set of Orthogonal Components. Filed July 7, 1961. Patented Aug. 30, 1966. Not available NTIS.

Patent 3,264,739. Apparatus for Measuring Area. Filed Nov. 15, 1963. Patented Aug. 9, 1966. Not available NTIS.

Patent 3,318,797. Method of Oxidizing Asphalt Flux With Oxides of Nitrogen. Filed July 21, 1965. Patented May 9, 1967. Not available NTIS.

Patent 3,327,239. Four-Terminal Direct-Current Amplifier. Filed Jan. 6, 1964. Patented June 20, 1967. Not available NTIS.

Patent 3,371,036. Method and Apparatus for Growing Single Crystals of Slightly Soluble Substances. Filed Oct. 20, 1965. Patented Feb. 27, 1968. Not available NTIS.

DEPARTMENT OF THE INTERIOR

Branch of Patents, U.S. Department of the Interior, Washington, D.C. 20240

Patent 3,714,010. Preparation of Anion Exchange Membranes From Cellulosic Sheets. Filed Jan. 6, 1972. Patented Jan. 30, 1973. Not available NTIS.

Patent 3,717,700. Process and Apparatus for Burning Sulfur-Containing Fuels. Filed Aug. 25, 1970. Patented Feb. 20, 1973. Not available NTIS.

Patent 3,716,615. Process for the Production of Cuprous Oxide. Filed Aug. 24, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent application 337,342. Simultaneously Removing Sulfur and Nitrogen Oxides From Gases. Filed Mar. 2, 1973. PC $3/MF $0.95.

Patent application 326,646. Decomposition of Carbonyl Sulfide (SCO) in Electric Charge. Filed Jan. 26, 1973. PC $3/MF $0.95.

Patent application 227,172. Improved Pulse Processing System. Filed Feb. 17, 1972. PC $3/MF $0.95.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th Street SW., Washington D.C. 20590

Patent application 327,953. Keyboard and Message System. Filed Jan. 30, 1973. PC $3.75/MF $0.95.

[FR Doc. 73-9008; Filed 5-8-73; 8:45 am]

Disclaimers

2,836,619.—*James C. Kirk* and *Warren W. Woods*, Ponca City, Okla. PURIFICATION OF ALKARYL SULFONATES. Patent dated May 27, 1958. Disclaimer filed Jan. 26, 1973, by the assignee, *Continental Oil Company*.

Hereby disclaims the remaining term of said patent.

3,640,734.—*Seymour Oppenheimer*, Chicago, and *Albin F. Turbak*, Danville, Ill. PREPARATION OF FIBROUS REINFORCED CASING FROM ALKALI SOLUBLE POLYVINYL ALCOHOL COPOLYMERS. Patent dated Feb. 8, 1972. Disclaimer filed Dec. 7, 1971, by the inventors, the assignee, *Tee-Pak, Inc.*, consenting.

Hereby disclaim the portion of the term of the patent subsequent to Feb. 8, 1989.

3,654,307.—*Joel D. Jamison*, Wilmington, Del. O,O-DIALKYL S - [2 - HALO - 1 - (N - SUCCINIMIDO)ETHYL]PHOSPHOROTHIOATES AND PHOSPHORODITHIOATES AND INSECTICIDAL COMPOSITIONS CONTAINING THEM. Patent dated Apr. 4, 1972. Disclaimer filed Aug. 11, 1971, by the assignee, *Hercules Incorporated*.

Hereby disclaims the portion of the term of the patent subsequent to Nov. 28, 1984.

3,671,495.—*Henry L. King* and *Eugene L. Ringwald*, Cary, N.C., and *James C. Randall, Jr.*, Bartlesville, Okla. THERMALLY STABLE POLYESTER FIBERS HAVING INHERENT DISPERSE DYE UPTAKE AND SUPERIOR OIL STAIN RELEASE PROPERTIES. Patent dated June 20, 1972. Disclaimer filed June 1, 1971, by the assignee, *Monsanto Company*.

Hereby disclaims the portion of the term of the patent subsequent to June 6, 1989.

3,709,657.—*Norman R. S. Hollies*, Bethesda, and *Steven R. Chaftz*, Rockville, Md. WET FIXATION OF RESINS IN FIBER SYSTEMS FOR DURABLE PRESS. Patent dated Jan. 9, 1973. Disclaimer filed June 22, 1972, by the assignee, *Cotton, Incorporated*.

Hereby disclaims the portion of the term of the patent subsequent to Oct. 14, 1986.

3,721,072.—*Thomas Miller Clapham*, Pittsburgh, Pa. BONDED ACTIVATED CARBON AIR FILTER. Patent dated Mar. 20, 1973. Disclaimer filed May 1, 1972, by the inventor, the assignee, *Calgon Corporation*, concurring.

Hereby disclaims the portion of the term of the patent subsequent to Feb. 29, 1989.

3,716,993.—*Maurice N. Sumner*, Houston, Tex. MODULAR OFFSHORE STRUCTURES SYSTEM. Patent dated Feb. 20, 1972. Disclaimer filed May 1, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Apr. 13, 1988.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 15, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-27-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-04-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	1-14-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-10-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	10-04-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy. Rocket Fuels; Radio-Active Material.	8-23-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	2-09-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-25-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	7-06-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-31-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	3-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-13-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines: Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-08-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	4-14-72

Expiration of patents: The patents within the range of numbers indicated below expire during May 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,743,442 to 2,748,387, inclusive
Plant Patents..... Numbers 1,472 to 1,480, inclusive

REISSUES

MAY 29, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,644

DECORATIVE LAMINATE BACKCOATED WITH A POLYVINYL ACETATE COMPOSITION

Peter Bernard Kelly and Gene Edward Grosheim, Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

No Drawing. Original No. 3,620,899, dated Nov. 16, 1971, Ser. No. 721,589, Apr. 16, 1968. Application for reissue Mar. 1, 1972, Ser. No. 231,037

Int. Cl. B32b *27/10, 27/30, 27/42*

U.S. Cl. 161—162 9 Claims

A decorative heat and pressure consolidated laminate in which the back most core sheet is coated on its exposed flat surface before the heat and pressure consolidation step with a [an adherable surface] coating composition consisting essentially of an aqueous latex dispersion of (A) a water dispersible polyvinyl acetate composition having a molecular weight between about 20,000 and 250,000 having a cold flow test value of from about 20 to 2,000, and having a particle size range from about 0.1 to 25 microns, containing from about 0% to about 15%, by weight, based on the weight of the polyvinyl acetate composition solids of a plasticizer, (B) from about 1% to about 10%, by weight, based on the weight of the polyvinyl acetate composition solids, of a protective colloid for (A), and (C) from about 0.1% to about 3%, by weight, based on the total weight of the dispersion of a water soluble starch [and decorative laminates coated on their back sides with said coating composition].

27,645

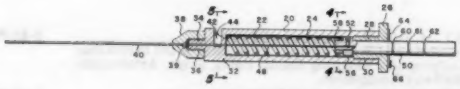
MICRODISPENSING DEVICE

Michael E. Drummond, West Chester, and John E. Robinson, Springfield, Pa., assignors to Drummond Instrument Co., Broomall, Pa.

Original No. 3,606,086, dated Sept. 20, 1971, Ser. No. 875,082, Nov. 10, 1969. Application for reissue Feb. 11, 1972, Ser. No. 225,683

Int. Cl. B67d *5/22*

U.S. Cl. 222—49 12 Claims



This invention is a microdispensing device into which a precision amount of liquid may be drawn and dispensed. The device includes a barrel having a bore and a disposable capillary tube removably held in communication with one terminal of the bore. A plunger moves through the barrel and the capillary tube, the plunger extending through an end cap in the opposite terminal of the barrel. Uniformly spaced annular recesses in the outer periphery of a plunger holder selectively engage a wire spring detent for determining by "feel" the amount of liquid dispensed. Travel limiting inserts removably positioned in the barrel regulate the length of the plunger stroke and consequently the amount of liquid drawn into and dispensed from the device.

27,646

PROCESS FOR PRESERVING CITRUS FRUIT FOOD PRODUCTS

Herman Cohen, 3604 Lake Sarah Drive, Orlando, Fla. 32804

Original No. 3,396,040, dated Aug. 6, 1968, Ser. No. 381,783, July 10, 1964, which is a continuation of Ser. No. 766,357, Aug. 27, 1968, which in turn is a continuation-in-part of Ser. No. 348,489, Mar. 2, 1964. Application for reissue Aug. 25, 1971, Ser. No. 174,900

Int. Cl. A23b *7/00*

U.S. Cl. 99—186 4 Claims

Preservation of peeled and sectionalized citrus fruits by cooking the fruit in a closed, partially vacuumized glass container at gauge pressures of between [5 and 15] *2 and 20* p.s.i. and at temperatures between [225° F. and 250° F.] *219° F. and 259° F.* with subsequent cooling of the container and its contents.

27,647

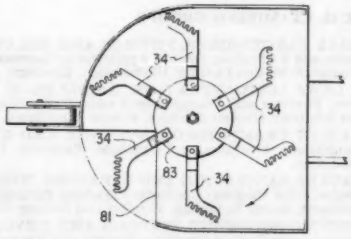
MOWER CUTTING DEVICE

Eugene V. Stair, Box 238, Rte. 1, Caddo, Okla. 74720

Original No. 3,482,380, dated Dec. 9, 1969, Ser. No. 483,203, Aug. 27, 1965. Application for reissue Nov. 23, 1970, Ser. No. 92,333

Int. Cl. A01d *55/18*

U.S. Cl. 56—295 8 Claims



The present invention relates to a cutting device for use with rotary power mowers. More particularly the cutting device for such use is comprised of a cutting plate having the combination of a straight cutting edge and a series of saw-teeth along its outer end arranged in a particularly advantageous configuration. This particular combination of a leading knife-like cutting edge combined with the particular sawtooth configuration provides a cutting means which will not become bound up with the cuttings and also avoids wedging and binding experienced with straight knife-like cutting edges.

27,648

PLASTIC BOTTLE CAP WITH INTEGRAL HANDLE

Jean Grussen, 6 Rue Adolphe Yvon, Paris, France

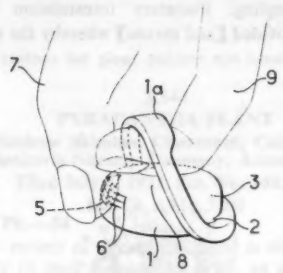
Original No. 3,462,035, dated Aug. 19, 1969, Ser. No. 747,635, July 25, 1968. Application for reissue June 3, 1971, Ser. No. 149,867

Int. Cl. B65d *41/22*

U.S. Cl. 215—41 25 Claims

A one-piece plastic bottle cap comprising a crown-shaped main part encircled by a reinforcing ring which

holds the main part on the bottle and is integral therewith over a 60° sector, but may be swung upwardly and used to pull the cap off the bottle. The cap has two depending



skirts and the inside of the outer skirt is provided with retaining means for engagement over the peripheral ridge on the mouth of a bottle.

27,649

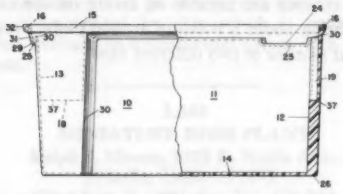
NESTING AND STACKING TRAY

Alvin W. Levenhagen, Linesville, Pa., assignor to North American Rockwell Corporation

Original No. 3,409,169, dated Nov. 5, 1968, Ser. No. 683,058, Oct. 12, 1967, which is a continuation-in-part of Ser. No. 480,606, Aug. 18, 1965. Application for reissue Nov. 4, 1970, Ser. No. 87,367

Int. Cl. B65d *21/04*

U.S. Cl. 220—97 D **4 Claims**



The container is made up of four planar walls made of relatively thin material and has four long legs that are integrally attached to the walls and extend from the top to the very bottom thereof. These long legs have an upwardly facing shoulder about midway between the top and the bottom of the container. Four short legs are attached to the sides of the box, likewise adjacent corners, and these short legs terminate at the bottom in a downwardly facing shoulder approximately midway between top and bottom of the container and an upwardly facing shoulder is formed at the upper end of the leg adjacent the rim of the box; thus, the long leg will rest on the upper end of the short legs during stacking and the long legs will nest in the pockets formed at the upper end of the long legs during nesting.

27,650

METHOD AND APPARATUS FOR THE DISPLAY AND RECORDATION OF SIGNALS

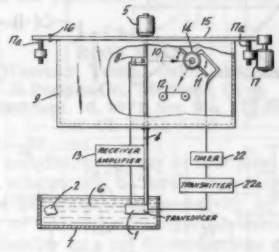
Gilbert Baum, 152 Brite Ave., Scarsdale, N.Y. 10583

Original No. 3,543,229, dated Nov. 24, 1970, Ser. No. 764,795, Oct. 3, 1968. Application for reissue Apr. 5, 1971, Ser. No. 131,185

Int. Cl. G01s *9/66*

U.S. Cl. 340—3 R **33 Claims**

The present invention provides apparatus and methods for signal display and recordation by employing the signal carrying the information to be displayed as a modulating signal for a light-emitting source. The system of the present invention provides for the disposition of the light emitted responsive to the signal applied thereto to be



spatially correlated on a display surface to the area of emanation of such signal. The present invention contemplates the initiating signal to be an ultrasonic signal.

27,651

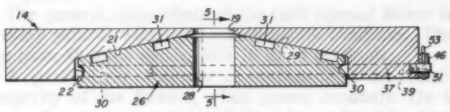
CENTER PLATE ASSEMBLY

Charles W. Artzer, 631 Freeman St. 66616, and Alexander M. Di Cicco, 1120 W. 31st St. 66611, both of Topeka, Kans.

Original No. 3,510,180, dated May 5, 1970, Ser. No. 743,097, July 8, 1968. Application for reissue Oct. 19, 1971, Ser. No. 190,542

Int. Cl. F16c *17/00*

U.S. Cl. 308—137 **5 Claims**



Structure surrounding the king pin of a railway vehicle supporting an end of the car body on a truck bolster and accommodating relative rotation of the truck bolster relative to the vehicle body. The structure insures prolonged lubrication of the center plate assembly and the structural arrangement reduces relative lateral and longitudinal movements of the interfitting plates and reduces shock that would otherwise be transmitted to the bearings, wheels and the track.

27,652

ELECTRONIC STANDBY DEFIBRILLATOR

Mieczyslaw Mirowski, Owings Mills, Morton M. Mower, Baltimore, and William S. Staewen, Belair, Md., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

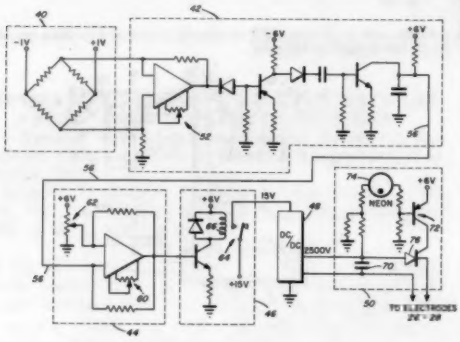
Original No. 3,614,954, dated Oct. 26, 1971, Ser. No. 9,934, Feb. 9, 1970. Application for reissue Feb. 25, 1972, Ser. No. 229,593

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 D **13 Claims**

A method and means for automatically defibrillating a malfunctioning heart. With the present invention, the heart function is continuously monitored. When the function

becomes abnormal, the malfunctioning heart is automatically shocked by a voltage of substantial size. If the



heart does not return to its normal functions after a given interval, then it is again shocked. Normal heart activity ensures that the shocking mechanism remains inert.

27,653

ELECTRIC ADJUSTING MEANS FOR AZIMUTH AND ELEVATION ADJUSTMENT

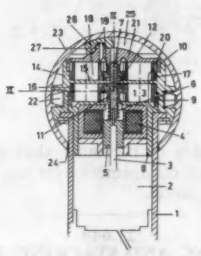
Aane Adriaan Oskam, De Meern, Netherlands, assignor to Technische Industrie A. C. Koot N.V., Montfoort, Netherlands

Original No. 3,552,836, dated Jan. 5, 1971, Ser. No. 833,890, June 11, 1969, which is a continuation-in-part of Ser. No. 701,353, Jan. 29, 1968. Application for reissue June 18, 1971, Ser. No. 154,549

Int. Cl. G02b *17/00*

U.S. Cl. 350—289 **14 Claims**

An adjusting means for azimuth and elevation adjustment comprising a hollow support and a universal joint connected to the support and to the part to be adjusted. A reversible electric motor is mounted in the support having a shaft, a reduction gear and an electro-magnetically controlled coupling. Planetary transmission [means] *systems* are provided [and means] whereby the shaft may



optionally be coupled with each of said transmission [means] *systems* by a reduction gear and [an] *the* electro-magnetically controlled coupling. The transmission [means] *systems* are capable of acting on the universal joint to [bring about a rotation around] *effect rotational adjustment relative to* two different axes.

PLANT PATENTS

GRANTED MAY 29, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,344
PYRACANTHA PLANT

Conrad Andrew Skimina, Claremont, Calif., assignor to Monrovia Nursery Company, Azusa, Calif.

Filed July 7, 1971, Ser. No. 160,575
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

A new variety of pyracantha plant is disclosed characterized by its pink flowers, red fruit, an extremely prostrate habit, and its ability to survive complete winter periods as low as Zone 4b (−20° F.) on the Plant Hardiness Zone Chart of the U.S. National Arboretum.

3,345
APRICOT TREE

John M. Garabedian, Fresno, Calif., assignor to Superior Farming Company

Filed Aug. 9, 1971, Ser. No. 170,394
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—39 **1 Claim**

An apricot tree which is of medium size, vigorous, upright, open, vase formed, hardy, and a regular and productive bearer of uniform, large, early ripening, firm fleshed fruit which is of good shipping, keeping and eating quality; the fruit being further characterized by its ability to remain on the tree for a substantial period of time without impairment of its commercial quality, and additionally characterized by skin which is golden yellow to golden overlaid to a substantial extent with a pinkish-red blush.

3,346
MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Sept. 7, 1971, Ser. No. 178,514
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, rounded, much branched, bush type, as illustrated and described, characterized by resemblance to the "Yellow Doll" miniature rose (U.S. Plant Patent No. 2,450) in general form of bud and flower but with color more orange than yellow, the general color effect of the freshly opened flower being an all over shade or blend of orange; and further characterized by a plant which is vigorous and compact in growth, easy to propagate by budding and from cuttings; with small medium green foliage, an abundance of bloom borne almost continuously throughout the growing season with flowers borne singly and in loose clusters.

3,347
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Sept. 10, 1971, Ser. No. 179,599
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an extremely vigorous habit of growth; excellent suitability as a cut flower because of a brilliant vermilion flower color, and unusually long vase life (often more than 7 or 8 days); and near immunity to attacks by rose powdery mildew.

3,348
ROSE PLANT

David L. Armstrong, Upland, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Sept. 30, 1971, Ser. No. 185,455
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—15 **1 Claim**

A new variety of rose plant of the Hybrid Tea class, of medium to tall growth habit, vigorous and much branched, with strong moderate length upright stems, usually each bearing only one bloom. The peduncles are unusually strong, and each will hold a fully opened flower in upright position, even though the flowers are relatively large, measuring from 4½" to 7" in diameter.

The buds have foliaceous appendages extending beyond the tip a distance equal to from one-third to full bud length. As the bud opens, the outer surface of the petals displays a deep golden yellow color, heavily overlaid with a strong orangish-red.

The general color effect of the fully opened flower is a creamy yellow, with light orangish-pink overtones. There are from 30 to 40 petals, with 10 to 16 petaloids.

A particularly desirable characteristic is the relative longevity of the flowers, when grown outdoors. On the bush, they last from 5 to 10 days in moderately cloudy weather in southern California. As cut flowers, at living-room temperatures, they will last for from 4 to 7 days. The flower has a pleasing moderately strong fragrance.

3,349
RAPHIOLEPIS PLANT

Charles H. Lee, Azusa, Calif., assignor to Monrovia Nursey Company, Azusa, Calif.

Filed Oct. 7, 1971, Ser. No. 187,583
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—54 **1 Claim**

A new variety of Raphiolepis plant characterized by exceptionally large coriaceous leaves and a profusion of very large pale pink flower clusters.

PATENTS

GRANTED MAY 29, 1973

GENERAL AND MECHANICAL

3,735,418
HELMET

Frank J. Kavanagh, 406 No. Cayuga Street, and Solomon C. Hollister, 201 Hallister Building, both of Ithaca, N.Y.

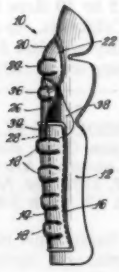
Filed Dec. 27, 1971, Ser. No. 212,077
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R 16 Claims

A rigid shell helmet has an improved way of holding the shell uniformly over the head of the wearer. This includes a cap formed of a network of non-stretchable bands arranged in arcs passing closely over the head and crossing each other at many points to form the legs of triangles arranged in hexagonal groups over the head with the bands in tension between the apexes of the triangles. The cap provides a firm grip on the head at all angles, and is centered within the helmet shell by a plurality of non-stretchable straps extending tangentially in tension from the cap to the shell. Several of these straps are preferably in the zenith region of the cap, and the lower region of the cap is secured to the lower region of the shell.

3,735,419
SHIN GUARD

Roy Thomas Byrd, Wilmette, Ill., assignor to SVT, Inc., Buffalo, N.Y.

Filed Apr. 30, 1971, Ser. No. 138,931
Int. Cl. A41d *13/06*
U.S. Cl. 2—22 3 Claims

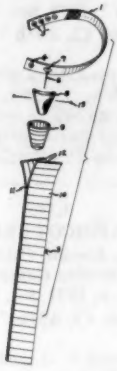


A shin guard for use in ice hockey and the like which includes a generally rigid intermediate protector member overlying the open area between the conventional shin and knee cap protector members. The intermediate protector member is secured to the lower shin protector member and partially overlies the knee cap protector member such that a force striking the intermediate protector member is distributed over the full length of the shin guard.

3,735,420
NECK BAND WITH REVERSIBLE TIE ASSEMBLY

John A. New, 1562 Wilson, Lincoln Park, Mich.

Filed Aug. 9, 1971, Ser. No. 169,945
Int. Cl. A41d *25/02*
U.S. Cl. 2—150 2 Claims

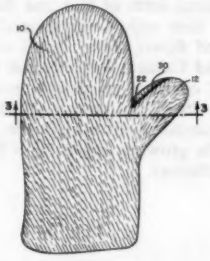


A neck band provided with means to adjustably attach it to accommodate the neck of a wearer, a pivot means projecting from said neck band at a desired angle, a simulated tie knot, including a body pivotally secured upon said pivot member, a tie member having an upper end portion thereof received upon said body, and a sleeve member enclosing said end portion and said body to complete said simulated knot, with means to secure the end portion, sleeve, and body together in assembly.

3,735,421
FUR SKIN HAND MITTEN

Ernest Graf, Port Washington, N.Y., assignor to Ben Kahn Furs Corp., New York, N.Y.

Filed Feb. 25, 1972, Ser. No. 229,538
Int. Cl. A41d *19/00, 13/10*
U.S. Cl. 2—158 1 Claim



A fur skin hand mitten as disclosed is comprised entirely of fur skin comprising a back portion including the back of the thumb and a front or palm portion including the front side of the thumb. The mitten is primarily for protection against the

cold and the fur side of the skin is on the outside of the back portion of the mitten and on the inside of the front portion of the mitten including the front or opposing portion of the thumb, thereby improving the method of manufacture in that it is only necessary to handle a single material, that is animal fur skin to provide the above structure, and which is particularly advantageous for certain winter sport activities.

3,735,422

STAIN PROOF TIE CONSTRUCTION

Israel Shemtov, 1594 Carroll Street, Brooklyn, N.Y.

Filed May 27, 1971, Ser. No. 147,354
Int. Cl. A41d *25/06*
U.S. Cl. 2—146 **3 Claims**

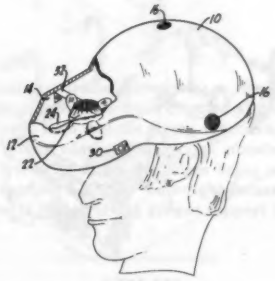
A tie construction in the form of a composite including thin flexible outer layers of synthetic resin sheeting and a layer of synthetic resin foam between the outer layers; the composite being heat sealed and simultaneously die cut to a desired necktie pattern; the outer layers of the tie being impermeable to stains of all kinds; the stains being readily removed therefrom.

3,735,423

HAT WITH VENTILATING MEANS

Julius Droz, Brooklyn, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,869
Int. Cl. A42c *5/04*
U.S. Cl. 2—171.3 **1 Claim**



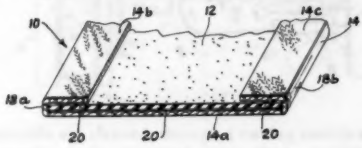
A hat provided with a hollow chamber having top mounted intake ports, and a front section having an adjustable vaned discharge port directed downward, with a miniature battery powered electric fan within the front section.

3,735,424

MULTI-PLY BELT FOR WAISTBAND CONSTRUCTION

Joseph P. Maggio, Commack, and Herbert Richter, Kew Gardens, both of N.Y., assignors to Elastic Systems Corporation, Farmingdale, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,297
Int. Cl. A41d *1/06, 1/14*
U.S. Cl. 2—221 **9 Claims**



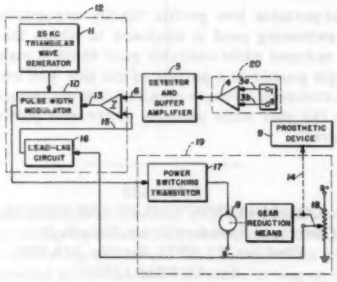
A multi-ply belt adapted to be sewn into a garment to form a waistband, and consisting of a knitted fabric sheath and a rubber core separably attached thereto by means of a temporary band which is sufficient to hold the sheath and core together while they are sewn to a garment, but insufficient to hold them together after they are sewn to the garment and under conditions of normal use and laundering of the garment.

3,735,425

MYOELECTRICALLY CONTROLLED PROTHESIS

Charles H. Hoshall, Burtonsville; Woodrow Seamone, Rockville, and Robert L. Konigsbert, Baltimore, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 10, 1971, Ser. No. 114,262
Int. Cl. A61f *1/00, 1/06*
U.S. Cl. 3—1.1 **22 Claims**



A control system that is suitable for use with prosthetic and orthotic systems utilizing a single site, closed-loop servo system. The closed-loop, position servo system comprises a sensor unit, signal amplifier, control unit, and a power pack unit. The terminal device opens in direct proportion to control signal amplitude as the muscles contract. The control unit conserves battery power by minimizing quiescent current when it is not necessary that the drive motor be powered.

3,735,426

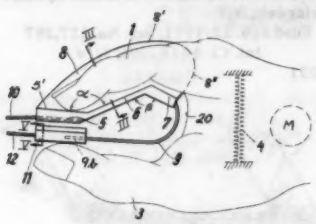
AUXILIARY DEVICE FOR HAND PROSTHESIS

Eduard Horvath, Duderstadt, Germany, assignor to Otto Bock Orthopadische Industrie KG, Duderstadt, Germany

Filed Feb. 28, 1972, Ser. No. 229,673
Claims priority, application Germany, Mar. 2, 1971, P 21 09 753.0
Int. Cl. A61f *1/06*
U.S. Cl. 3—12.8 **10 Claims**

A device for assisting in the holding of elongated bodies and small articles, for use with a hand prosthesis (artificial hand)

comprises a band-type spring urging apart an upper and a lower member, one of which is engaged by the thumb while the other is engaged by the index finger and middle finger of



the artificial hand. The upper member has a web received between these fingers. A pair of pincer-type extensions project from the upper and lower members.

3,735,427

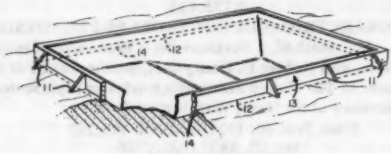
SEMI-PORTABLE SWIMMING POOL

Walter J. Ancewicz, 4828 Kingwood Way, San Jose, Calif., and Orville H. Marsh, 6125 Prospect Road, San Jose, Calif.

Filed July 21, 1971, Ser. No. 164,726

Int. Cl. E04h *3/16, 3/18*

U.S. Cl. 4—172.19 5 Claims



A semi-portable low profile readily expandable therapy pool or swimming pool is disclosed in which the side wall height is reduced while desirable pool depth is maintained by using virgin ground as a portion of the side wall and in which side wall structural strength requirements are reduced by constructing the side walls partially above and partially below ground level.

3,735,428

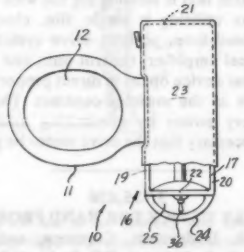
COMBINATION TOILET AND URINAL

Carlo F. Olivero, 66 Saunders Street, Dalzell, Ill.

Filed Jan. 21, 1972, Ser. No. 219,780

Int. Cl. E03d *13/00*

U.S. Cl. 4—97 5 Claims



A combination toilet and urinal in which the urinal is formed as an integral part of the flush tank at one end, the back of and/or both ends thereof or in a modified form of the invention on one corner thereof. The urinal is provided with a flush valve using a portion of the water from the flush tank and has a separate drain to the sewage outlet portion of the toilet.

3,735,429

AUTOMATIC TOILET INSTALLATION

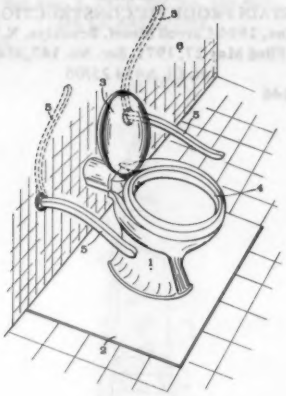
Ernesto Bondonio, Via Michele Lessona 89, Torino, Italy

Filed Feb. 14, 1972, Ser. No. 225,975

Claims priority, application Italy, Feb. 25, 1971, 67657 A/71; Feb. 8, 1972, 67371 A/72

Int. Cl. E03d *9/04, 13/00*; A47k *3/22*

U.S. Cl. 4—213 7 Claims



An automatic toilet installation comprising switch means arranged below the toilet seat to produce operation of an exhaust fan system for exhausting air from the toilet bowl, and of means for spraying water in the toilet bowl in response to pressure exerted on the toilet seat by a person sitting thereon, and for operation of flushing means and a perfume atomizer in response to release of said pressure, and means arranged below a platform surrounding the base of the toilet bowl so that as said platform is depressed the lid of the toilet bowl is automatically opened.

3,735,430

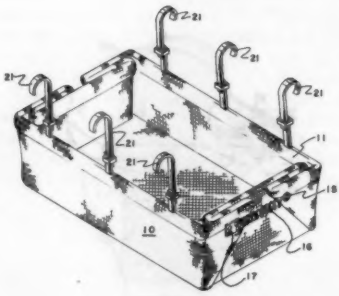
CARRIER

Cloyce W. Platz, 448 Franklin Street, Bend, Oreg.

Filed July 17, 1972, Ser. No. 272,593

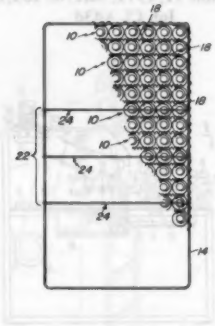
Int. Cl. A47c *27/08*

U.S. Cl. 5—118 2 Claims



The carrier comprises a frame assembly, including a substantially rectangular base and wall-forming rods pivotally mounted at the terminal edges of the base and carrier hanger means, and a cover disposed about the exterior of the frame assembly and having fastening means operable to hold walls of the carrier in a folded configuration.

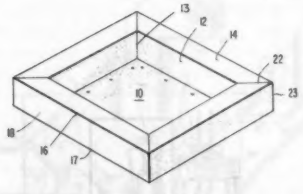
3,735,431
SPRING CONSTRUCTION
George Zocco, South Braintree, Mass., assignor to Slumberland Products Co., Woburn, Mass.
Filed Oct. 21, 1971, Ser. No. 191,530
Int. Cl. A47c 23/02
U.S. Cl. 5—267 3 Claims



A furniture spring construction comprised of an array of hour glass coil springs arranged in parallel rows and surrounded by edge wires, and with at least one stringer having a central portion interwoven with the end turns of coil springs in one or more selected rows and fastened at its opposite ends to the edge wire to impart greater stiffness to the mattress at selected regions.

This invention relates to box springs and mattresses, and more particularly comprises a new and improved construction for providing additional support at selected areas of a box spring or mattress.

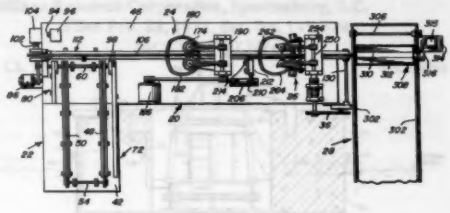
3,735,432
COLLAPSIBLE WATER MATTRESS FRAME
Bernhard Kreten, 3311 Felter St., Philadelphia, Pa., and Louis J. Cutillo, 1085 Camphill Road, Fort Washington, Pa.
Filed Jan. 6, 1971, Ser. No. 104,427
Int. Cl. A47c 27/08, 19/00
U.S. Cl. 5—348 10 Claims



A water mattress frame comprising a semi-rigid resilient frame of rectangular cross section covered with a sheet of flexible, pliant plastic such that the plastic extends as a membrane between the lower edges of the frame members, wrapping around said frame members the edges being suitably sealed and thereby forming a hollow watertight recess into which a water mattress is placed giving proper support to the sides of the mattress.

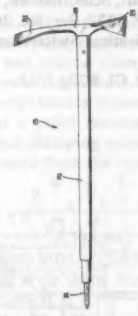
3,735,433
MACHINE FOR UNCAPPING WAX HONEYCOMB
John T. Smith, P.O. Box 786, Blountstown, Fla.
Filed July 13, 1971, Ser. No. 162,115
Int. Cl. A01k 59/02
U.S. Cl. 6—12 A 16 Claims

A machine for uncapping honeycombs including a feeding mechanism for depositing honeycombs on a conveyor chain in sequential relation with the conveyor chain conveying the honeycomb through a buffing or cleaning station in which the



honeycombs are cleaned, through a cutting station where the honeycombs are uncapped and then supporting the honeycombs in overlying relation to a drain tank.

3,735,434
ICE AXE
Harvey Larry Penberthy, 5624 S. W. Admiral Way, Seattle, Wash.
Continuation of Ser. No. 113,936, Feb. 9, 1971, abandoned.
This application Apr. 25, 1972, Ser. No. 247,452
Int. Cl. B25f 1/00; B25c 5/16
U.S. Cl. 7—8.1 R 6 Claims

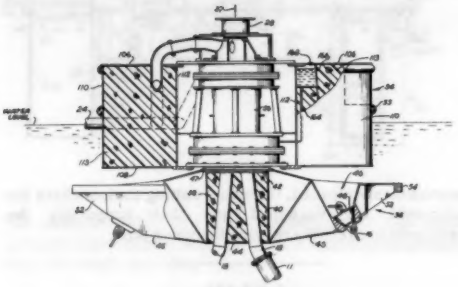


Disclosed is an ice axe for use by mountaineers having improved ice chopping action and an increased bite into hard snow and ice during self-arrest. The pick portion of the axe head is provided with a hatchet-like blade having an increased maximum swinging radius. The upper and lower edges of the pick diverge so that the lower edge forms an acute angle with the axis of the shaft for improved hooking capability. The cutting edge of the blade has positive clearance.

3,735,435
ROTARY HULL SINGLE BUOY OFFSHORE LOADING TERMINAL
Gunther M. Mikulicic, 3923 ½ Bluff Place; Yoram Katz, 710 W. 40th Street, both of San Pedro, Calif., and Charles A. Sada, 5437 Radford Street, North Hollywood, Calif.
Filed June 2, 1970, Ser. No. 42,802
Int. Cl. B63b 21/52, 35/44
U.S. Cl. 9—8 P 10 Claims

An outer buoyant rotary hull structure fixedly mounts an upper conduit system for rotation therewith. Flow communication is established between the lower end of the rotatable upper conduit system and the upper end of a stationary lower conduit system through a central swivel coupling. The upper end of the lower conduit system is supported within a moored lower base structure that is held stationary in a fixed position by an anchor system. A bearing assembly wholly enclosed

within a watertight closure at the center of the buoyant rotary hull rotatably supports the lower base structure to maintain



the upper and lower conduit systems rotatably aligned within the central swivel coupling.

3,735,436

ARRANGEMENT FOR DISENGAGING THREADING DIES IN A THREADING DIE HEAD

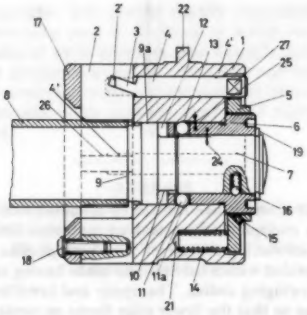
Georges Louys, Schaffhausen, Switzerland, assignor to Georg Fisher Aktiengesellschaft, Schaffhausen, Switzerland

Filed June 9, 1972, Ser. No. 261,531

Claims priority, application Switzerland, June 14, 1971, 8625/71

Int. Cl. B23g 5/12

U.S. Cl. 10—96 R **16 Claims**



For disengageably securing threading dies in the head of a thread-cutting machine or a similar device, axially extending holding bolts are provided in a die carrier for locating the dies in the threading position. The ends of the holding bolts spaced from the dies are secured to a flange displaceably mounted on the die carrier. A slide bushing is in threaded engagement with the flange and extends axially through a bore in the die carrier. A sensing bolt extends through the slide bushing and has a contact surface on one end for contacting a workpiece being threaded. Springs are located in the die carrier for biasing the flange away from the dies. While the workpiece is being threaded, the slide bushing is held against displacement in the axial direction relative to the die carrier, however, when the threading action is completed the sensing bolt is displaced axially and releases the locking action between the slide bushing and the die carrier. As a result, the flange connected to the slide bushing is biased by the spring so that the holding bolts release the dies from the threading position.

3,735,437

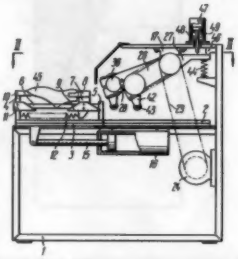
UPPER ROUGHING DEVICE

Boris Zakharovich Krolikov, Nevsky prospekt, 153, kv.; Jury Petrovich Krylov, Strelna, ulitsa Vokzalnaya, 2, kv. 2; Ilya Iosifovich Brod, prospekt Kosmonavtov, 52, korpus 1, and Boris Isaeivich Pripshtein, ulitsa Zhukovskogo, 20, kv. 41, all of Leningrad, U.S.S.R.

Filed June 11, 1971, Ser. No. 152,108

Int. Cl. A43d

U.S. Cl. 12—1 R **1 Claim**



A device, wherein the last fixing arrangement is made in the form of a toe and a heel rests, one of which is capable of moving towards the second one, thus providing for the clamping and the release of the last, while the starting and the end templets are rigidly secured to the heel and the toe rests, respectively.

3,735,438

MACHINE FOR TURNING THE SHANK EDGE ON AND SECURING IT TO THE INSOLE OF A SHOE

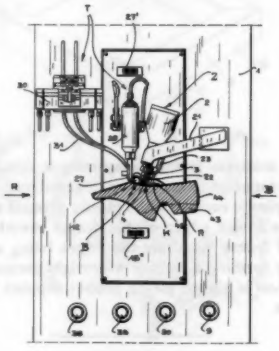
Tilo Loffler, Pirmasens-Winzeln, and Herbert Schindler, Pirmasens, both of Germany, assignors to Schon & Cie Gesellschaft mit beschrankter Haftung, Pirmasens, Germany

Filed May 3, 1971, Ser. No. 139,805

Claims priority, application Germany, May 2, 1970, P 20 21 495.3

Int. Cl. A43d 21/00

U.S. Cl. 12—8.3 **11 Claims**



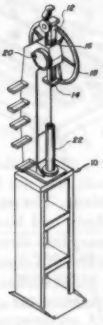
In a shoemaking machine there is provided a draw roll mechanism, a pressing mechanism, an adhesive applicator mechanism and a nailing mechanism, all arranged in close juxtaposition and all having the same work range to operate in close succession on the same portion of a last advanced through the machine.

3,735,439

HEEL NOTCHING MEANS

James M. Chafin, Atlanta, and Henry R. Padovani, Austell, both of Ga., assignors to Textron Inc., Providence, R.I.

Filed Jan. 24, 1972, Ser. No. 220,288
Int. Cl. A43d 79/00
U.S. Cl. 12—42 R 9 Claims



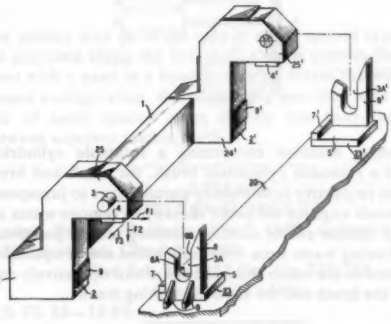
Means is provided for notching a shoe heel block to accept a wedge-shaped metal wear piece. The notching means is arranged for use in pressure applying apparatus of a sort heretofore available and adapts such apparatus to effect the notching much more readily than has previously been possible.

3,735,440

RAMP ENGAGEMENT DEVICE

Casimir Hetmanski, 421 Kimball Avenue, Westfield, N.J.

Filed July 21, 1971, Ser. No. 164,629
Int. Cl. B65g 11/00
U.S. 14—71 11 Claims



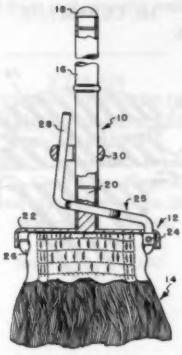
An arrangement for releasably securing together heavy structures, such as a ramp and a ship, is taught utilizing a distributed engagement device. One portion of the device is carried on a free end of the ramp while the other portion of the device is mounted on the ship deck. The ramp portion of the device is constructed with a mating structure having a particular geometry, and the deck portion of the device is constructed with a mating surface having a negative geometry from that of the ramp mating structure. Bearing surfaces are positioned on the ramp portion of the device and on the ship deck in a manner substantially to eliminate the transmittal of loading forces through the mated device.

3,735,441

MOP HEAD SUPPORT TOOL

Willard H. Shortte, Jr., La Grange, Ga., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 22, 1971, Ser. No. 117,518
Int. Cl. A47l 13/24
U.S. Cl. 15—150 4 Claims



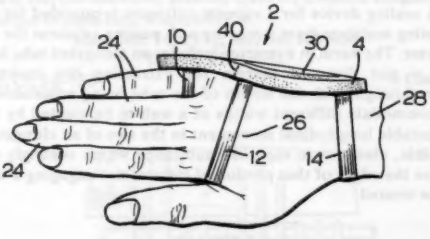
Mop head support tool particularly designed for reception, support, quick release, and replacement of a wet-type mop head wherein first and second clamping means for retaining the mop head therebetween have first open unobstructed ends, and hand-manipulatable means attached to the second clamping means at a point remote from its open end for removing the second clamping means whereby a mop head may be readily released from the clamping means without interference.

3,735,442

HAND MOUNTED ERASER

Joseph Lukas, 150 West 33rd Street, Hamilton, Ontario, Canada

Filed May 20, 1971, Ser. No. 145,530
Claims priority, application Canada, May 14, 1971, 112,991
Int. Cl. B43l 21/00
U.S. Cl. 15—227 7 Claims



A hand mounted chalk eraser has an elongated flexible felt pad and three fastening loops secured to the pad, one loop near each end and one in the middle. One end loop extends about the user's little finger; the other end loop extends about the user's wrist, and the middle loop extends about the palm and back of the user's hand, to hold the eraser securely on the edge of the user's hand remote from his thumb. In another embodiment, the pad is shortened and only the wrist loop and the middle loop and used.

3,735,443

WINDSHIELD WIPER BLADE CONSTRUCTION

Hans-Christian Deutscher, Ludwigsburg, and Kurt Bauer, Kleiningersheim, both of Germany, assignors to SWF Spezialfabrik Fuer Autozubehoer Gustav Rau GmbH, Bietigheim, Germany

Filed Sept. 3, 1971, Ser. No. 177,707

Claims priority, application Germany, Nov. 27, 1970, P 20 58 389.5

Int. Cl. B60s 1/38

U.S. Cl. 15—250.36 7 Claims

A windshield wiper blade comprises a blade wiping band and includes an upper portion with a plurality of longitudinally spaced transversely extending grooves into which are placed spring elements. The spring elements are designed as flat wire springs bent undularly parallel to the wiping field.

3,735,444

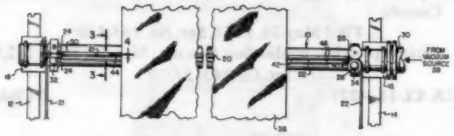
SEALING DEVICE FOR VACUUM EXTRACTOR

Andrew P. Cecere, Valley Stream, N.Y., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Filed Dec. 9, 1971, Ser. No. 206,257

Int. Cl. A47l 5/38

U.S. Cl. 15—307 9 Claims



A sealing device for a vacuum extractor is provided for extracting moisture from a moving web passing adjacent the extractor. The vacuum extractor includes an elongated tube having a slot disposed therein for extracting the moisture therethrough, with the length of the tube being adjustable to accommodate different widths of a web to be treated by the adjustable longitudinal movement in the slot of an elongated, flexible, elastomeric rope-like substance which sealingly engages the edges of that portion of the slot not engaging a web to be treated.

3,735,445

LOBSTER TAIL CUTTING DEVICE

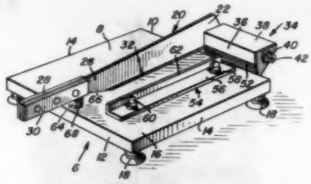
Frank C. Jurcak, c/o Sirloin House, Route 18 & 51, Lostart, Ill.

Filed July 22, 1971, Ser. No. 165,119

Int. Cl. A22c 29/00; B26d 04/34

U.S. Cl. 17—71 7 Claims

For cutting frozen or fresh lobster tails, a time and labor saving tail-holding and cutting device for safe use by restaurant cooks when preparing lobster tails. A non-corrodible plate provides a foundation for the ready-to-sever lobster tail. This plate is provided at the site of operation with positioning and guide means for temporarily stabilizing and maintaining the tail in a localized captive state. A manually actuatable blade is operatively cooperable with the surface and has a cutting edge movable toward and from the plate surface in a manner to longitudinally cleave the tail. An adjustable adapter bracket is provided for pivotally anchoring the forward or



distal end of the cutting blade. The proximal end is provided with an appropriate handgrip and limit stop which prevents the cutting edge from coming into direct contact with the surface of the foundation plate. An upstanding portion of the bracket and coordinating guide means facilitates maintaining the lobster tail in a given position for safe and reliable cutting needs.

3,735,446

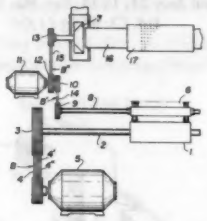
CLEANING DEVICE FOR CIRCULAR COMBS ON A COMBING MACHINE

Henry Lorenz, and Hans-Joachim Scholz, both of Karl-Marx-Stadt, Germany, assignors to VEB Spinnereimaschinenbau, Karl-Marx-Stadt, Germany

Filed Dec. 9, 1970, Ser. No. 96,558

Int. Cl. D01g 19/22

U.S. Cl. 19—218 1 Claim



A combing machine comprising a rotatable cylindrical comb and a rotatable cylindrical brush, the comb and brush rotating on respective substantially parallel axes so juxtaposed that the brush engages the comb thereby to remove waste accumulated on the comb, suction cleaning means positioned for withdrawing waste from the comb, a first motor operatively connected to the comb and a second motor operatively connected to the brush and the suction cleaning means.

3,735,447

HOLDER AND FASTENER

Frederick W. Abraham, Redwood, Calif., assignor to Fabet, Inc., Redwood City, Calif.

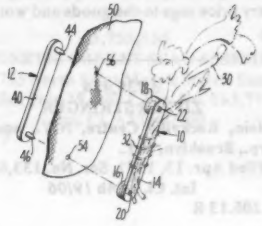
Filed Sept. 3, 1971, Ser. No. 177,683

Int. Cl. A45f 5/08; A44b 9/08

U.S. Cl. 24—6 1 Claim

A device for holding an object and fastening same in a desired location. For example, the device may be used for securing a corsage or the like to an item of wearing apparel. The device includes a first element comprising a first body member adapted to have a corsage secured thereto and means defining a socket integrally connected to the first body member. The device further includes a second element comprising a second body member and fastener means in the form

of pins projecting outwardly therefrom. When the device is used in conjunction with a corsage, the second element is adapted for disposition on the inside of the wearing apparel

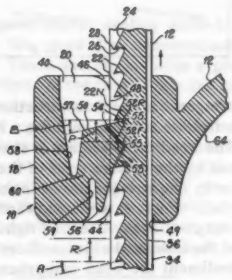


with the fastener pins adapted to pierce the wearing apparel and enter the socket of the first element to effect releasable engagement therebetween.

3,735,448
WIRE TIE

William T. Waddington, Fanwood, N.J., assignor to Buchanan Electrical Products Corporation, Union, N.J.

Filed Feb. 25, 1970, Ser. No. 14,023
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **13 Claims**

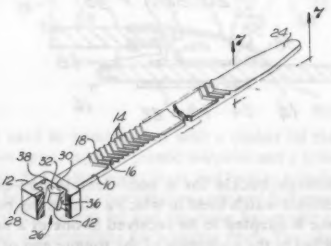


A unitary wire tie of the type in which spaced ratchet teeth are provided along the length of a strap portion for engagement with a pawl in a head portion to retain the wire tie in a looped configuration, the pawl being provided with at least a pair of teeth spaced apart slightly less than the spacing between adjacent ratchet teeth.

3,735,449
CHEVRON BUNDLE TIE

Louis A. Rosales, Manhattan Beach, Calif., assignor to Western Filament, Inc., Glendale, Calif.

Filed Feb. 28, 1972, Ser. No. 229,722
Int. Cl. B65d *63/00*
U.S. Cl. 24—16 PB **8 Claims**

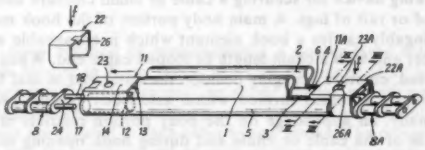


A one-piece bundle tie comprising a strap having at one end a lock member into which the other end of the strap can be inserted. One face of the strap is provided with a plurality of transverse teeth, each tooth having locking faces formed as a chevron. The lock member comprises a head having an aperture therethrough to pass the strap and a pawl carried therein, the distal faces of the pawl having a chevron configuration in correspondence to and for cooperative engagement with the chevron-formed tooth faces of the strap. The pawl is dependent from a ledge within the locking head aperture, the ledge having lateral faces extending between opposite walls of the aperture and spaced from said opposite walls to impart flexure to the pawl.

3,735,450
DEVICE FOR FASTENING THE ENDS OF TUBES WHICH SUPPORT ELEMENTS FOR PROCESSING TEXTILE FIBERS

Jean-Frederic Herubel, Guebwiller, France, assignor to N. Schlumberger & Cie, Guebwiller, Haut-Rhin, France

Filed June 15, 1972, Ser. No. 262,999
Claims priority, application France, June 29, 1971, 7123620
Int. Cl. F16g *13/00*
U.S. Cl. 24—31 R **5 Claims**

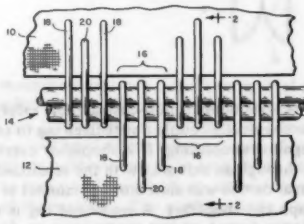


A device for fastening on two driving chains the longitudinally split ends of tubes for supporting elements employed for processing textile fiber, wherein the device is constituted by a coupling member comprising two elements slidably mounted within the ends of two successive supporting tubes and joined together by a connecting element, one portion of the said member which projects from the extremities of the said supporting tubes being engaged on extensions of the pivot-pins of two links of the corresponding chain while a detachable locking member engaged on the said portion of the coupling member forms an axial distance-piece between the end faces of the extremities of the said supporting tubes and the corresponding chain-link face.

3,735,451
SEAM FOR PAPER FELTS

James Haythornthwaite, Joliette, Quebec, Canada, assignor to Seapa Dryers, Inc., Waycross, Ga.

Filed Oct. 14, 1971, Ser. No. 189,436
Int. Cl. F16g *3/02*
U.S. Cl. 24—33 **4 Claims**



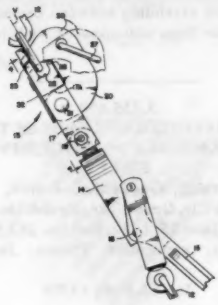
A clipper seam wherein the hooks for joining the ends of felts are arranged in alternating groups such that a limited number of hooks will be brought into rubbing engagement by lateral shifting or bowing of the ends of the felts.

3,735,452

RELEASABLE HOOK MEANS FOR SECURING LOG LOADS

Elvin O. Burroughs, Route 2, Box 204, Dexter, Oreg.

Filed Feb. 28, 1972, Ser. No. 229,973
Int. Cl. A44b *13/02*
U.S. Cl. 24—68 CD 3 Claims



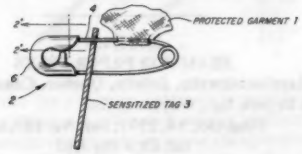
Hook means for use in conjunction with an over-center locking device for securing a cable or chain cincture about a load or raft of logs. A main body portion of the hook means swingably carries a hook element which is engageable at its outer end with a chain length or looped cable end. When in a closed, cincture engaging position the outer end of said hook occupies a recess formed within said body portion. Additionally, an appendage on the body portion restricts movement of the cable or chain end during hook opening movement to permit the hook to be swung open from a remote position away from an unstable log load.

3,735,453

SAFETY PIN WITH PIN POINT GUARD FOR PREVENTING MANUAL REMOVAL OF SAID POINT FROM SAID GUARD

Robert L. Nathans, 36 Stag Drive, Billerica, Mass.

Filed Feb. 25, 1972, Ser. No. 229,527
Int. Cl. A44b *9/12*
U.S. Cl. 24—156 R 19 Claims



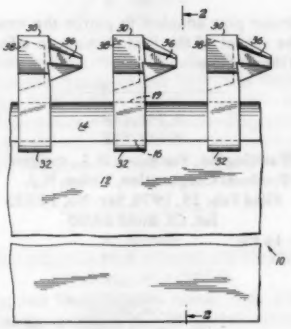
A special destructable or non-destructable safety pin is employed to mechanically couple a sensitized tag to an item to be protected against shoplifting. If a shoplifter carries the protected item through an exit area with the sensitized tag on the item, an alarm device will alert store personnel to apprehend or photograph the shoplifter. A sensitized tag is rapidly and easily applied strictly by hand to the protected garment by means of the special safety pin which upon being closed annot be opened except by special devices at the cashier's station. Once the safety pin is closed, it cannot be opened by a shoplifter without cutting the pin portion which is made difficult, at least for the average shoplifter, because the pin portion is case hardened by well-known techniques; also shoplifters, particularly a large number of females, would be reluctant to use wire cutters, carry them about and be caught with them. Additionally, the special safety pin may be employed to attach ordinary price tags to the goods and would thwart price tag switching.

3,735,454

ZIPPER STRINGER

Barry Goldstein, Rockville Centre, N.Y., assignor to Stagg Zipper Corp., Brooklyn, N.Y.

Filed Apr. 13, 1971, Ser. No. 133,617
Int. Cl. A44b *19/06*
U.S. Cl. 24—205.13 R 4 Claims



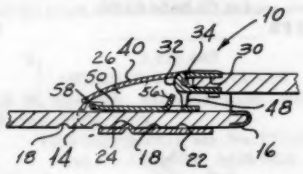
A flexible stringer of integral construction for slide fasteners is shown. The flexible stringer includes a flat flange member and a bead. The bead cross-section is shaped to conform to the area defined by the closure arms of the fastener elements emplaced upon it. The stringer shown includes a substantially flat inner surface which extends outwardly at substantially right angles from the flange. A second right angle is defined at the juncture of the inner and outer surfaces of the bead. In the preferred embodiment the bead comprises a half cylindrical volume symmetrically positioned with respect to the flange and has a cylindrical void located symmetrically within it. A firm holding force between the stringer and the conventional fastener members is obtained.

3,735,455

SLIP-THROUGH BUCKLE

Seymour Hauser, North Bergen, N.J., assignor to Kreisler Manufacturing Corporation, North Bergen, N.J.

Filed May 20, 1971, Ser. No. 145,418
Int. Cl. A47b *19/00*
U.S. Cl. 24—191 6 Claims



A slip-through buckle for a semi-flexible non-expansible and non-resilient watch band in which a boss in the base of the buckle frame is adapted to be received in one of a number of spaced notches in the underside of the tongue end of the band and in which a resilient clamping plate retained on the frame and overlying the tongue end of the band and which is urged

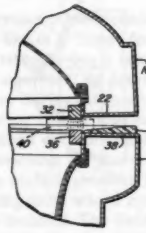
into engagement with the upper side of the tongue end of the band by cams as the cover of the buckle is closed may flex to accommodate temporary misalignment between the boss and a recess, which misalignment can be corrected by pulling on the band and without damage to the parts of the buckle.

3,735,456

MAGNETIC CASKET SEAL ASSEMBLY

Lelon Cude, 1725 North Saint Mary's Street, San Antonio, Tex.

Filed July 19, 1971, Ser. No. 163,770
Int. Cl. A17g *61/00*
U.S. Cl. 27—17 4 Claims



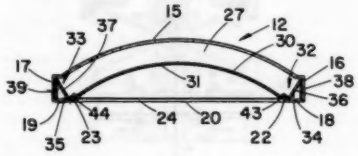
A unique magnetic casket sealing assembly is provided which eliminates the need for conventional sealing and locking hardware. The assembly includes a plurality of permanent magnets affixed to the casket base and hinged lid components and positioned adjacent to the closure surfaces with a gasketlike tapered seal of resilient, deformable material mounted on the closure surface of the casket base. The permanent magnets each extend slightly beyond the planes of the rigid closure surfaces, such that a slight gap is maintained therebetween when the magnets engage each other, allowing the gasket to deformably flow within the gap to maintain a constant seal without the use of conventional hardware.

3,735,457

CASKET LID

Richard B. Esterdahl, P.O. Box 16BB, Prophetstown, Ill.

Filed May 6, 1970, Ser. No. 35,107
Int. Cl. A61g *17/04*
U.S. Cl. 27—19 16 Claims



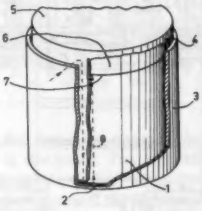
A liner used in combination with a casket lid that is composed of an upper layer of plastic material and a lower layer of a fabric bonded to the upper layer and having a design molded therein. The liner has edges that engage and fit against internal surfaces of the casket lid and the liner has molded therein a design that is appropriate for a casket liner. The plastic is of a resilient material so that the liner itself is biased into a relatively fixed position when inserted in the lid.

3,735,458

METHOD OF MANUFACTURING ROTARY ANODES FOR USE IN X-RAY TUBE AND ROTARY ANODES MANUFACTURED BY SAID METHOD

Frederik Magendans, and Bernard Josef Pieter Van Rheenan, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1970, Ser. No. 87,097
Claims priority, application Netherlands, Nov. 8, 1969, 6916885
Int. Cl. H01j *9/16, 9/44*
U.S. Cl. 29—25.18 6 Claims



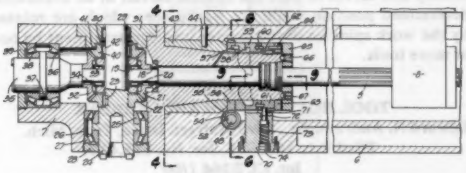
A novel method of manufacturing a double-layer rotary anode for use in X-ray tubes, in which by means of a "high energy rate forming process" an anode portion mainly made of tungsten and a supporting portion mainly made of molybdenum are secured to each other by one stroke. The composition and the pretreatment of each of these portions may be chosen to the optimum with respect to the required properties such as mechanical strength and heat resistance, which properties are not adversely affected by this process of adhesion in contrast to the effect of known adhering techniques.

3,735,459

MULTIPLE AXIS WORK HEAD-WITH DUAL IN LINE WORK SPINDLES AS DISCLOSED

William T. Allen, P.O. Box 4151, Downey, Calif.

Filed Aug. 28, 1970, Ser. No. 67,798
Int. Cl. B23c *1/10, 1/12*; B23b *39/02*
U.S. Cl. 29—26 15 Claims



A single machine tool work head having dual spindles, in which one spindle is in a horizontal position and the second spindle is in line (i.e. at right angles thereto). The spindles are contained in a tool head which rotates to any of four or more positive positions, with automatic unlock, index and lock features. Five or more tool positions are shown along the X, Y and Z axes of the machine. The machine has a single drive to perform work on workpieces and to permit exposure of different planes for machine operations such as milling, drilling, boring, grinding or three-dimensional contouring. The work head is self-contained and does not require adaptors to achieve the five tool positions.

3,735,460

BEARING, CENTERING AND INDEXING MEANS FOR THE SPINDLE CARRIERS OF MULTIPLE SPINDLE MACHINES

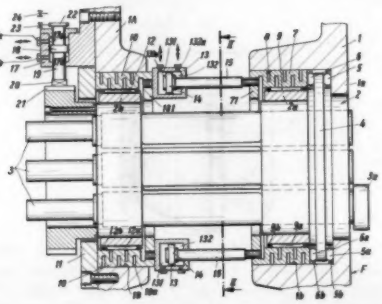
Rudolf Crachy, Babenhausen, and Hans Jacoby, Gottwolshausen, both of Germany, assignors to Werkzeugmaschinenfabrik Gildemeister & Comp. Aktiengesellschaft, Bielefeld, Germany

Filed Feb. 16, 1972, Ser. No. 226,915

Claims priority, application Germany, Feb. 18, 1971, P 21 07 735.0

Int. Cl. B23b *3/18*

U.S. Cl. 29—48.5 22 Claims



A multiple spindle machine wherein the front portion of the spindle carrier is rotatable in two axial antifriction bearings and a radial antifriction bearing. The front axial bearing is adjacent to an abutment of the machine frame and the rear axial bearing is separated from the front axial bearing by a flange of the spindle carrier. The radial bearing surrounds the spindle carrier behind the rear axial bearing and is surrounded by an axially compressible clamping ring which can be biased by one or more cylinder and piston assemblies to bear against the rear axial bearing and to thereby undergo radial expansion. The rear axial bearing causes the flange to press the front axial bearing against the abutment to thus maintain the front portion of the spindle carrier in a predetermined axial position. The radially expanding clamping ring bears against a cylindrical internal surfae of the frame and at least indirectly against the front portion of the spindle carrier so that the latter is accurately centered in the frame. A ring gear on the spindle carrier is engaged by a second gear which serves to rotate the spindle carrier between successive working positions. The ring gear can also be engaged by a gear segment which is movable radially of the spindle carrier by a cylinder and piston assembly and serves to lock the spindle carrier in an accurately determined position while the workpieces which are rotated by the work spindles in the carrier undergo treatment by one or more tools.

3,735,461

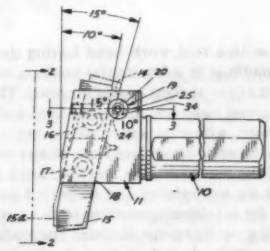
TOOL HOLDER WITH ANGLE-INDEX

Edward N. Andrews, Sr., 6490 Malvern Drive, Troy, Mich.

Filed Feb. 16, 1971, Ser. No. 115,412

Int. Cl. B26d *1/00*

U.S. Cl. 29—98 4 Claims



A turning tool holder for turret lathes, lathes, automatic turning machines, and similar tools, which is provided with an angle-index dial and cam means for indexing the tool holder to accommodate turning tools having various side cutting edge angles.

3,735,462

METHODS FOR THE MANUFACTURE OF BEARING SUPPORTS FOR ELECTRIC ROTARY MACHINES

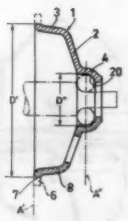
Stig Lennart Hallerback, 12, Blodbaksjatan, Vastra Frolunda, Sweden

Filed Nov. 1, 1971, Ser. No. 194,140

Claims priority, application Sweden, Nov. 2, 1970, 14728/70

Int. Cl. B21h *1/12*; B21k *1/04*

U.S. Cl. 29—148.4 R 8 Claims



A method for precision manufacture of bearing supports for electric rotary machines such as electric motors, said bearing supports comprising a cup-shaped member the larger end of which forms a mounting portion for being secured in a permanent way, such as by bonding, to a stator end face inside the stator end windings, and the smaller end of which provides location for rotor bearing means, consisting of the steps of pressing sheet metal to form the support by multi-stage transfer pressing in continuous working stages, forming the larger end of the bearing support in one stage to provide an abutment surface parallel to a plane at substantially right angles to a rotor bearing-locating surface of generally cylindrical form in the smaller hub-like end of the bearing support, forming in another stage a generally cylindrical surface concentric with the rotor bearing-locating surface and forming in still another stage at least one bonding surface dependent of said surfaces determining dimensional and geometrical accuracy.

3,735,463

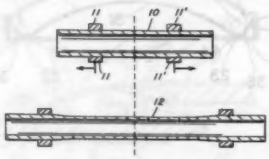
METHOD OF FORMING TAPERED TUBULAR MEMBERS

Anthony Merola, Pittsburgh, Pa., assignor to Amerola Products Corporation, Pittsburgh, Pa.

Filed Nov. 4, 1971, Ser. No. 195,794

Int. Cl. B23p *17/00*

U.S. Cl. 29—155 C 12 Claims



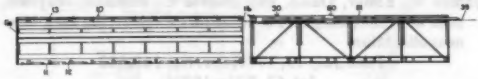
A method of forming tapered, generally tubular members having a controlled wall thickness along the length of the tapered member, comprising elongating a portion of a hollow, cylindrical body to decrease the wall thickness of the elongated portion of the body, and thereafter tapering a selected portion of the body to a predetermined shape by reducing the diameter of the selected portion.

3,735,464

APPARATUS FOR FABRICATING WALL PANELS AND THE LIKE FOR BUILDINGS

Leonard J. Linzmeier, and Loren D. Kowing, both of c/o 301 S. Stoughton Rd., Madison, Wis.

Filed Nov. 24, 1971, Ser. No. 201,714
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 A 6 Claims



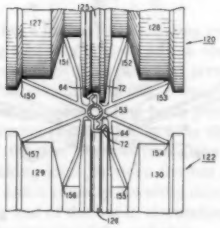
Multi-station apparatus for constructing and handling wall panels, floors and the like in a "house factory". The apparatus comprises a framing table having a rectangular flat workbed with an air-cylinder operated jig assembly for holding the work pieces in position during fabrication. The framing table has a series of conveyor rollers longitudinally spaced along each side of the workbed on a pivotable carriage whereby a rough wall panel fabricated on the workbed can be lifted above the bed by the elevating rollers for moving the rough wall panel to a finishing table where exterior siding is put on and window units are installed. The finishing table has a series of fixed axis rollers longitudinally spaced along each side for receiving the rough wall panel from the framing table with which it is aligned. The finishing table has a hydraulically operated tilt bed for standing the finished wall panel in a substantially upright position under an overhead crane extending longitudinally above the pivot axis of the tilt bed and beyond the finishing table for carrying the wall panel directly to the factory loading dock.

3,735,465

ASSEMBLING APPARATUS FOR ROLLING AND CLAMPING A PART TO A TUBULAR MEMBER

Alan R. Tibbetts, Costa Mesa, and Donald R. Tucker, Lakewood, both of Calif., assignors to Airco, Inc., New York, N.Y.

Division of Ser. No. 792,593, Jan. 21, 1969, Pat. No. 3,672,446. This application Feb. 7, 1972, Ser. No. 224,320
Int. Cl. B23p *15/26*
U.S. Cl. 29—202 D 5 Claims



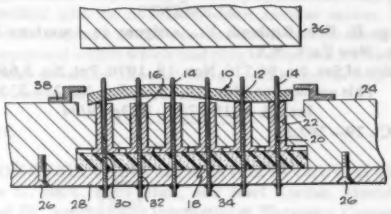
This invention relates to a finned assembly for a heat exchanger comprising an extended surface portion, an elongated tubular member, said extended surface portion comprising two identical parts, each having an internal cylindrical surface adapted to engage said tubular member and each having radially extending locking members adapted to engage locking members on the other of said parts. The invention further relates to methods and apparatus for attaching said extended surface portion to said member.

3,735,466

APPARATUS FOR FASTENING CONTACT PINS TO A SUBSTRATE

Neil F. Jensen, Phoenix, Ariz., assignor to Semiconductors Electronic Memories Incorporated, Phoenix, Ariz.

Filed May 3, 1971, Ser. No. 139,411
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B 6 Claims



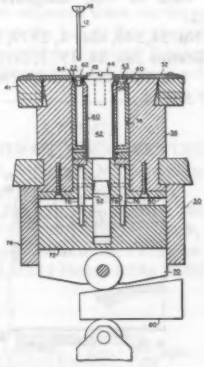
A die structure for fastening contact pins to a thin brittle ceramic substrate is disclosed. The structure includes a plurality of individual bushings, which are supported on a flexible pad, and which in turn support the substrate. The flexible pad represents an elastic foundation of particular spring constant. When a heading ram is lowered on contact pins to form pin heads, the substrate is in direct contact with the flexible bushings, since the bushings move in a plane parallel to the force and conform to the substrate irregularities, thereby eliminating any bending moments in the substrate which cause substrate cracking.

3,735,467

FORM-CRIMPING APPARATUS FOR THE MANUFACTURE OF ELECTRICAL COMPONENTS

Ernest F. Smart, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1971, Ser. No. 146,750
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D 6 Claims



An apparatus for the manufacture of electronic components and more particularly in the electronic tube art wherein bell-shaped eyelet shield members are threaded on and positioned accurately on stem lead members of an assembly used in electronic tubes. This is accomplished by the provision of a plurality of holding cavities for supporting and positioning the eyelet members and providing easy insertion of the stem lead members into the eyelets. In addition, means is provided for accurately positioning the stem with respect to the eyelet holding cavities and crimping means is provided for securing the eyelet to the stem lead wherein a force is simultaneously

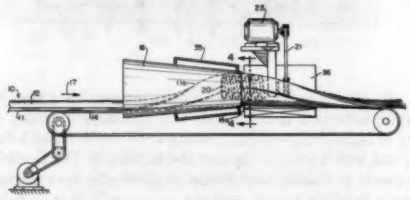
applied to opposite sides of a portion of the eyelet members to crimp the eyelet members to the stem lead without the undesirable forces being applied to the stem lead assembly. Orientation cavities are provided for leading the eyelets into the holding cavities.

3,735,468

APPARATUS FOR MAKING FLEXIBLE STRIPS OF MATERIAL HAVING A PILE OF HOOK-SHAPED ELEMENTS

George H. Erb, Rutland, Vt., assignor to American Velcro, Inc., New York, N.Y.

Division of Ser. No. 90,710, Nov. 18, 1970, Pat. No. 3,665,584.
This application Mar. 13, 1972, Ser. No. 234,235
Int. Cl. A41h *37/06*; B23p *19/04*
U.S. Cl. 29—207.5 3 Claims



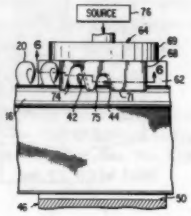
An apparatus is disclosed for making the hook or loop part of a seperable hook and loop type fastener by bending a flexible base strip having a plurality of unbroken hook-shaped rails protruding from one surface thereof into a generally tubular form with the rails extending radially inwardly thereof; and thereafter progressively subjecting spaced-apart cross-sectional segments of each rail alternately and periodically to a rotational cutting action to transform each rail into a row of individually spaced-apart resilient hooks or loops.

3,735,469

APPARATUS FOR FORMING SLIDE FASTENERS

George B. Moertel, Conneautville, and James R. Wilson, Conneaut Lake, both of Pa., assignors to Textron Inc., Providence, R.I.

Division of Ser. No. 34,340, May 4, 1970, Pat. No. 3,672,008.
This application Jan. 24, 1972, Ser. No. 220,296
Int. Cl. B23p *19/04*, *11/00*
U.S. Cl. 29—207.5 R 32 Claims



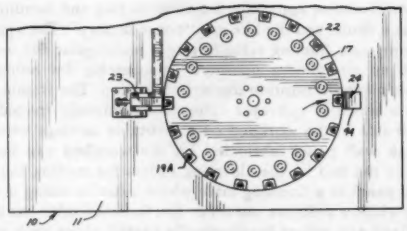
Apparatus for forming a slide fastener having terminal elements reduced in size relative to the remaining fastener elements and two stop members adjacent the terminal fastener elements each being formed from a mass of fusible material fused onto the slide fastener including a support block having parallel channels for receiving separate slide fastener tapes, a forming anvil having a pair of spaced legs movable in the channels to capture the terminal fastener elements in cavities therein, a source for supplying ultrasonic energy to the forming anvil to reduce the size of the terminal fastener elements, a forming block supporting the separated slide fastener tapes adjacent cavities defined therein by another forming anvil, a forming member engaging the forming block to move the forming block relative to the other forming anvil and shear blanks of fusible material in the cavities, and a source for supplying ultrasonic energy to the forming member to fuse the blanks onto the slide fastener tapes to form separate stop members.

3,735,470

INDEXING TOOL TABLE

James W. Elmer, Osseo, and Donald C. Reschke, Wayzata, both of Minn., assignors to Inventors Engineering Inc., Minneapolis, Minn.

Filed July 19, 1971, Ser. No. 163,622
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 F 20 Claims



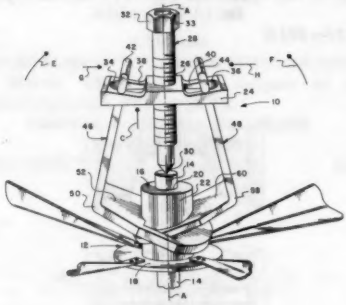
An indexing tool table which has a tooling plate or dial which rotates about a substantially upright axis and which has indexing means thereon and also utilizes interlocking pin and receptacle means located adjacent the periphery of the dial to hold the dial stable during use. The interlocking pin and receptacle means forming the holding device are disengaged during the indexing operations.

3,735,471

DEVICE FOR REMOVING A FAN FROM A SHAFT

Donald L. Kappler, 1012 South Gloucester, Irving, Tex.

Filed Dec. 17, 1971, Ser. No. 209,248
Int. Cl. B23p *19/04*
U.S. Cl. 29—261 11 Claims



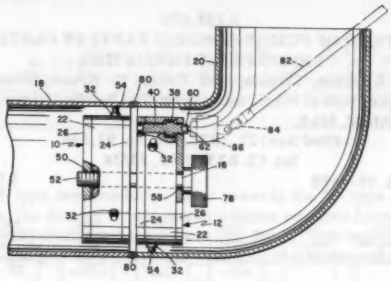
A device for removing objects such as pulleys, fans, gears or the like from a shaft, having a body with a threaded bore extended therethrough, an elongated bolt in threaded engagement with said threaded bore, a pair of elongated slots extending through said body, said slots extending radially on opposite sides of said bore, and first and second elongated engagement means, each having a circular bore in one end thereof, said bores being of a size to allow said engagement means to be placed over an axially extending surface on said object, the other end of each of said engagement means being removably inserted through said slots.

3,735,472

PIPE FITTING WELD ALIGNMENT APPARATUS

Irving Silverman, 5152 Walsh Way, San Diego, Calif.

Filed Mar. 26, 1971, Ser. No. 128,408
Int. Cl. B25b 27/14
U.S. Cl. 29—272 3 Claims



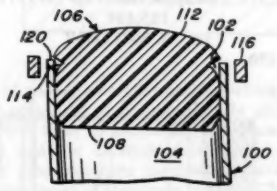
Apparatus for holding pipe sections in alignment during welding, particularly pipe fittings such as elbows and the like. Two compact chuck units are mounted by a simple jig in the confronting ends of the pipe sections to be joined, and are then coupled by an adjustable connector to set the position of the sections. After initial welding, the connector and chuck units are removed through the pipe fitting. The apparatus is adaptable to a wide range of pipe sizes.

3,735,473

METHOD OF FABRICATING A HOLLOW BAT AND PRODUCT THEREOF

Richard C. Wilson, Arcadia, Calif., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 8, 1971, Ser. No. 121,824
Int. Cl. B23p 17/00
U.S. Cl. 29—421 4 Claims



A method of making a hollow bat including providing a hollow bat body having a handle portion at one end and a barrel portion at the other with at least one end terminating in an opening. Providing an end plug having a transverse end wall and a generally cylindrical depending body portion having at least one annular groove therein. Deforming the end plug or the end portion of the bat body defining the open end to establish an interlocking joint between the bat body and end plug. The bat body has a radially inwardly directed flange at the opening defining end of the bat in circumferential engagement with the annular groove of the end plug.

In one form of the method the open end of the hollow bat is provided with a radially inwardly directed flange at the open end. The end plug is composed of resiliently compressible material and is positioned in axial alignment with the bat body at a position spaced from the flange. Relative axial closing movement is established between the plug and the bat body in order to compress the resilient plug radially and establish entry of the plug into the bat body. Movement is terminated when the radial bat flange is seated in the annular groove.

In another form of the method the end plug is positioned partially within the open end of the bat and the joint is effected by reforming the annular free edge of the open end radially inwardly to establish an inwardly directed flange in the bat body in circumferential engagement with the annular groove. The bat body may be composed of an electrically conductive material and the flange formation effected by a magnetic field generated by means not physically contacting the bat body.

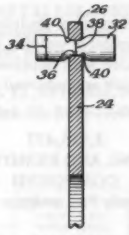
A hollow metal bat body having a handle at one end and a barrel portion at the other end. An end plug having a transverse end wall and depending generally cylindrical body portion provided with an outwardly open annular recess. The body portion disposed within one end of the hollow metal bat and the open end within which said plug is disposed terminates in a radially inwardly directed flange which has its free end disposed within the annular recess.

3,735,474

METHOD OF SECURING SEPARATOR IN CLUTCH DISC

Nils-Eric G. Bark, Lake Bluff, and Karl Kordas, Mudelein, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 837,146, June 27, 1969, Pat. No. 3,584,720. This application Feb. 12, 1971, Ser. No. 114,928
Int. Cl. B23p 11/02
U.S. Cl. 29—451 2 Claims



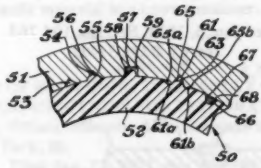
A multiple disc clutch pack for transmitting and interrupting power flow between a drive member and a driven member. Alternating discs axially shiftable, but non-rotatably secured to one of the members, have elastomeric elements extending into engagement with adjacent discs on the said member to separate the discs when the power flow therethrough is interrupted, and are compressible to permit frictional engagement of all the discs when the power is being transmitted.

3,735,475

METHOD OF MANUFACTURING VENTED LINED PIPE

Lee Walter Marriott, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 870,915, Aug. 19, 1969, abandoned, which is a division of Ser. No. 681,829, Nov. 9, 1967, Pat. No. 3,506,039. This application Oct. 8, 1971, Ser. No. 187,822
Int. Cl. B21d 39/00; B23p 19/04
U.S. Cl. 29—455 1 Claim



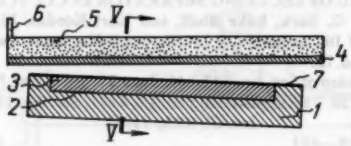
Lined pipe is conveniently and safely vented by providing a plurality of spaces disposed between the lining and the pipe and venting gases at the terminal portions of the pipe section either to another section or to a gas dispersal facility.

3,735,476

METHOD OF MANUFACTURING COMPONENTS WITH CAVITIES BY EXPLOSIVE WELDING OF METAL BLANKS

Andrei Andreevich Deribas, ulitsa Pravdy, 1, kv. 20, Novosibirsk; Vladimir Mikhailovich Kudinov, ulitsa Filatova, 1/22, kv. 51, Kiev; Felix Iovich Matveenkov, ulitsa Pravdy, 1, kv. 24, Novosibirsk; Vladimir Ivanovich Oksak, Basseinaya ulitsa, 8, kv. 4, Kiev; Valery Alexandrovich Simonov, bulvar Molodezhi, 30, kv. 19, Novosibirsk; Nikolai Gerasimovich Ostapenko, deceased, late of Kiev; Klara Mikhailovna Ivanova, administrator, bulvar Lesi ukrainki, 2, kv. 20, Kiev, and Alexei Nikolaevich Ostapenko, administrator, ulitsa Molodezhnaya, 4, kv. 220, Moscow, all of U.S.S.R.

Filed Jan. 29, 1970, Ser. No. 6,797
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 3 Claims



A method of manufacturing multilayer components with inner hollows by the explosive welding of metal blanks, one of the blanks being provided with depressions filled with fusible or soluble materials which are removed after welding.

3,735,477

METHOD OF USING AND REMOVING A PARTING COMPOUND

James J. McGlynn, Paoli, Pa., assignor to Lukens Steel Company, Coatesville, Pa.

Division of Ser. No. 795,044, Jan. 29, 1969, Pat. No. 3,658,565. This application Oct. 13, 1971, Ser. No. 188,995
Int. Cl. B23k *1/20*
U.S. Cl. 29—470.9 5 Claims

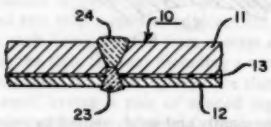
A process of preparing a pack of composite metal plate assemblies wherein juxtaposed surfaces of stainless steel to be separated have applied thereto a parting composition comprising a mixture of an oxide of chromium and manganese dioxide in a ratio of about 0.01—5 parts of the chromium compound to 1 part of the manganese dioxide by volume. The assembly is thereafter hot worked. When separated the coatings formed on the surfaces of the stainless steel plates are removed without pretreating by means such as mechanical means or a caustic bath, such removing being with an acid pickle of nitric and hydrofluoric acids.

3,735,478

METHODS FOR MAKING BI-METALLIC PIPE

Milton Porter, Pittsburgh, Pa.; Warren Kearns, Steubenville, Ohio; Conrad Washek, Doraville, and Paul Lambert, Savannah, both of Ga., assignors to L. B. Foster Company, Pittsburgh, Pa.

Filed Jan. 6, 1971, Ser. No. 104,263
Int. Cl. B23k *31/02*
U.S. Cl. 29—477.3 4 Claims



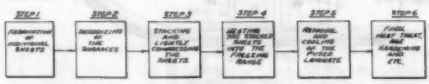
A method for making bi-metallic pipe and a bi-metallic pipe are provided in which a strip of carbon steel having fixed thereto a strip of corrosion resistant metal of the same width is spirally wound into a pipe and welded with a first weldment in the corrosion resistant metal extending into the carbon steel and a second weldment in the carbon steel extending into the first weldment.

3,735,479

METHOD OF FUSION-BONDING PARTS BY PARTIAL LIQUID PHASE FORMATION

Seong K. Rhee, Livonia, and Robert S. Kiwak, Dearborn Heights, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed Nov. 27, 1970, Ser. No. 93,330
Int. Cl. B23k *3/02, 35/24*
U.S. Cl. 29—498 1 Claim



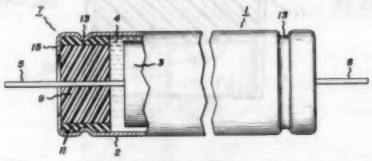
A method of fusion bonding parts which are of material comprised of two or more components such as aluminum-magnesium alloys so that the material experiences a "freezing range" as it is heated from its solid state to its liquid state. The method includes heating the assembled parts just into the freezing range so that they remain substantially unaltered in shape and size, while the small amount of liquid formed creates a rapid fusion of the parts so that the parts are fusion bonded together upon cooling of the assembly.

3,735,480

POLYTETRAFLUOROETHYLENE END PLUG SEAL FOR ELECTROLYTIC CAPACITORS

Wilfred Harold Yeamans, Seabrook, Tex., assignor to General Electric Company, Owensboro, Ky.

Continuation-in-part of Ser. No. 6,016, Jan. 22, 1970, which is a continuation of Ser. No. 753,332, June 28, 1968, abandoned, which is a division of Ser. No. 536,043, March 21, 1966, Pat. No. 3,422,319. This application Feb. 12, 1971, Ser. No. 115,107
Int. Cl. B01j *17/00*
U.S. Cl. 29—570 1 Claim



A method for forming an end plug seal for an electrolytic capacitor, which includes formation of a plug through which the lead wire extends. The plug is formed of Teflon having an etch bonded layer or coating of a fluoroelastomer synthetic rubber simultaneously baked and cured in situ. The container for the capacitor is formed around the periphery of the coating so that it grips the coating and extends across a portion of the Teflon end plug.

3,735,481

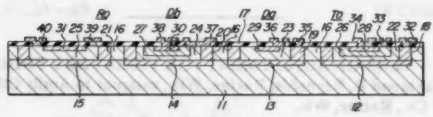
METHOD OF MANUFACTURING AN INTEGRATED CIRCUIT HAVING A TRANSISTOR ISOLATED BY THE COLLECTOR REGION

Tsugio Makimoto, Kodaira-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 4,468, Jan. 19, 1970, Pat. No. 3,596,149, Continuation of Ser. No. 752,049, Aug. 12, 1968, abandoned. This application Feb. 25, 1971, Ser. No. 118,615
Int. Cl. B01j *17/00*
U.S. Cl. 29—578 7 Claims

A method of manufacturing a semiconductor integrated circuit in which a P type semiconductor layer is epitaxially grown

in the surface of a P type semiconductor substrate containing N^+ buried layers therein, the P type layer is divided into a plurality of electrically isolated portions by N^+ type regions which are formed by diffusing a donor impurity into the surface of



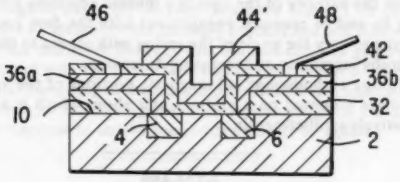
said P type semiconductor layer towards the N^+ type buried layers, the divided P type semiconductor portions forming individually diodes and transistors with the N^+ type regions connected to said buried layers as their structural elements.

3,735,482

METHOD OF MAKING AN MOS TRANSISTOR INCLUDING A GATE INSULATOR LAYER OF ALUMINUM OXIDE AND THE ARTICLE SO PRODUCED

Peter Edward Norris, and Frank Benjamin Micheletti, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed June 16, 1971, Ser. No. 153,662
Int. Cl. B01j *17/00*
U.S. Cl. 29—571 **4 Claims**



A method of making an MOS transistor which has a gate insulator layer composed of aluminum oxide made by plasma anodizing a thin layer of aluminum, in which the thin aluminum layer and the anodized layer are not defined by etching. The gate electrode insulator layer is formed by depositing a thin layer of aluminum over the entire surface of the device after the source and drain contacts are made and then converting the entire aluminum layer to aluminum oxide.

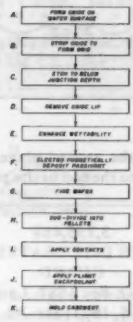
3,735,483

SEMICONDUCTOR PASSIVATING PROCESS

Gary S. Sheldon, Union Springs, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 21,373, March 20, 1970, Pat. No. 3,642,597, which is a division of Ser. No. 782,093, Dec. 9, 1968, abandoned. This application Aug. 25, 1971, Ser. No. 174,974
Int. Cl. B01j *17/00*
U.S. Cl. 29—580 **1 Claim**

A semiconductive wafer is selectively protected and etched so that a grid of intersecting grooves is formed on one or both major surfaces. The grooves extend below junction depth. Oxide lip portions overhanging the grooves may be removed and the grooves may be treated to enhance wettability. A passivant is then selectively electrophoretically deposited into the grooves. Where glass is employed as the passivant it is fired after deposition. The wafer may be sub-divided into pellets before or after contacts are applied. A pliant supplemental passivant encapsulates the semiconductive pellet, and a casement is molded thereabout to complete the device. One semiconductive element that may be obtained by the passivation process is characterized by a passivant coating on a beveled



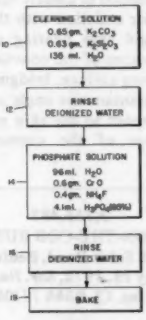
periphery that progressively increases the thickness as it approaches a major surface intersecting the beveled periphery.

3,735,484

NON-CORROSIVE COATING FOR THIN ALUMINUM METALLIZATION

Harold S. Gurev, Paradise Valley, and Ralph W. Kirk, Phoenix, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 17, 1970, Ser. No. 99,012
Int. Cl. B01j *17/00*
U.S. Cl. 29—588 **4 Claims**



To prevent corrosion of aluminum metallization of semiconductor devices, the device, including the aluminum metallization thereof is phosphated with a phosphate solution that includes no sodium. The phosphating may take place before the leads are provided or after. Portions of the phosphated surface may be covered by deposited glass. Then the phosphated semiconductor device or IC may be encapsulated in a plastic material in a known manner.

3,735,485

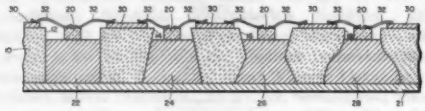
METHOD OF PROVIDING THERMALLY CONDUCTIVE GROUND CONNECTIONS FOR INTEGRATED CIRCUITS

Richard W. Wilson, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 25, 1971, Ser. No. 109,451
Int. Cl. B01j *17/00*
U.S. Cl. 29—591 **7 Claims**

A method for providing thermally conductive ground connections for semiconductor devices is provided in which a thermally and electrically conductive plug is put into a hole in a substrate before or after conductive material is deposited on the back of the substrate and then the conductive material is

made thick enough to provide a ground plane to retain the plug in place and to make thermal and electrical connections



between the plug and the ground plane. Then the integrated circuit may be bonded to the top of the plug.

3,735,486

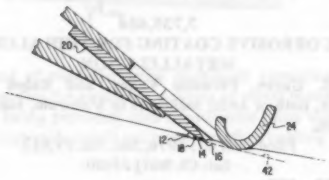
RAZOR BLADE WITH INTEGRATED SUPPLEMENTAL GUARD

Frederick L. Risher, P. O. Box 1887, Laurel, Miss.

Filed Apr. 5, 1971, Ser. No. 131,020

Int. Cl. B26b *21/16, 21/54*

U.S. Cl. 30—78 **4 Claims**



A razor blade including a supplemental guard in the form of an integral bead positioned in closely spaced, parallel relation to the cutting edge for coaction with the conventional razor guard to provide rigid skin bearing surfaces bridging the cutting edge. The purpose of the coacting structure is to provide a two point bearing surface, bridging the cutting edge, to thus decrease the instantaneous angle of attack made by the cutting edge with respect to the skin surface as the same is deformed by passage of the conventional razor guard thereacross.

3,735,487

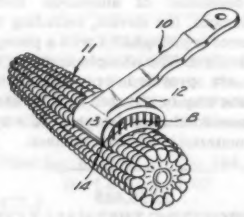
CORN-ON-THE-COB BUTTERER

Joseph D. Wojcik, 128 Solon Road, Bedford, Ohio

Filed May 15, 1972, Ser. No. 253,558

Int. Cl. B26b *11/00*

U.S. Cl. 30—124 **4 Claims**



A device for applying butter to corn-on-the-cob is disclosed. The device includes a base having a pair of spaced, parallel blades projecting therefrom and a multiplicity of relatively stiff, butter-impaling bristles located between the blades. The blades and bristles terminate at an imaginary cylindrical surface with the blades being parallel to a straight line generatrix of the surface so that the blades and bristles conform to the surface of an ear of corn. To apply butter to an ear of corn, the bristles are forced downwardly into a butter pat so that the pat is retained by the device. Preferably the bristles are formed from a relatively poor heat conducting material so that the butter is melted by contact with the ear of corn and unmelted butter is retained by the bristles so that only a preselected amount of butter is applied to the corn. The blades facilitate removal of a pat of butter from a plate and prevent the butter from running down the cylindrical surfaces of the corn during use.

3,735,488

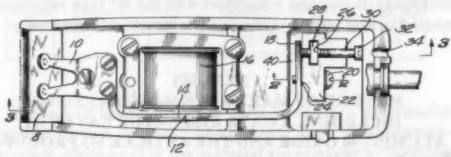
TENSION ADJUSTMENT FOR VIBRATORY TOOL

Raymond B. Reynolds, Racine, Wis., assignor to Andis Clipper Co., Racine, Wis.

Filed Apr. 26, 1971, Ser. No. 137,457

Int. Cl. B26b *19/02, 19/38*

U.S. Cl. 30—210 **6 Claims**



For exemplification, the vibratory tool disclosed is a hair clipper with a spring connected with the blade and having an intermediate portion acting as an armature for an alternating current magnet. Near its rear end, the spring curves to extend transversely of the case and abuts an anchorage block. A bolt anchors the spring pivotally yieldably to this block. Accessible from the exterior of the case is a tension adjusting screw having its end in pressure engagement with the free end of the spring to vary the angle of the spring with regard to the block, thereby increasing or decreasing its tension.

In one embodiment, all magnetic portions of the vibratory tool are mounted on a primary unit about which is a case of relatively synthetic resin.

3,735,489

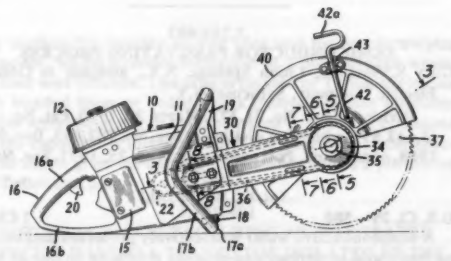
HAND-HELD POWER TOOL WITH ROTARY TOOL DISC AT END OF REVERSIBLE FORWARDLY PROJECTING ARM

Nicholas Ignatius Zatorsky, Jr., Greenwich, Conn., assignor to Textron, Inc., Providence, R.I.

Filed Feb. 18, 1971, Ser. No. 116,333

Int. Cl. B27b *9/00*

U.S. Cl. 30—390 **11 Claims**

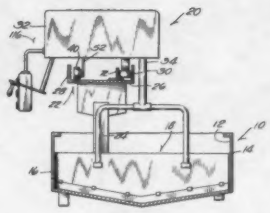


A hand-held power tool has a circular saw or other disc-shaped tool at the forward end of an arm projecting forwardly from the one side of the engine chassis. The arm is reversible so that the tool disc can be positioned either directly ahead of the engine chassis for normal use or at one side for cutting close to an obstruction. In both positions the tool disc is driven by a belt from a drive pulley on the engine drive shaft.

3,735,490
CARRIAGE AND DRIVE ARRANGEMENT FOR CHEESE VATS AND CURD TABLES

Meredith C. Thomson, Oconomowoc, Wis., assignor to Stoelting Brothers Company, Kiel, Wis.

Filed Mar. 2, 1971, Ser. No. 120,259
Int. Cl. A01j 25/02
U.S. Cl. 31—47 18 Claims

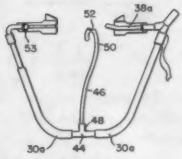


A carriage for driving an agitator or pusher moves on an elongated, vat mounted track and has three wheel engagement with the track. The take-off for the agitator drive or the pusher connection is made over the side of the track and the track is completely closed. The track and carriage are laterally offset relative to the center of the vat and the take-off and pusher connection are located generally on the vat center. A chain extending the length of the track is connected at both ends to the track and passes over a motor driven sprocket located in the carriage to move the carriage along the track. Two guide wheels are located between an angle bracket and one side wall of the track and move between that bracket and wall generally in alignment with the chain. One end of the chain is anchored by means of a spring to maintain a taut chain and is associated with a limit switch arrangement for interrupting the carriage drive in response to an overload on the pusher or agitator.

3,735,491
DENTAL SHIELDING DEVICE

Javier A. Pabalan, Jr., Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed July 21, 1971, Ser. No. 164,774
Int. Cl. A61c 17/04
U.S. Cl. 32—33 10 Claims

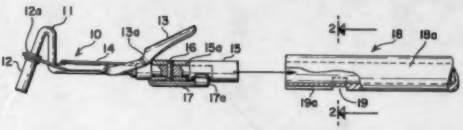


A dental device positionable about the head of the patient for protecting dental personnel during a dental procedure. The device includes a cheek retractor, means for tensing the cheek retractor, and reusable or disposable aspirator tubes carried by the cheek retractor. The aspirating tubes each have an orifice directed into the mouth of the patient with the other end of the tubes being connected to a vacuum source. With this arrangement, odors, aerosols and the like, such as finely divided tooth or filling material which are generated in the mouth during a dental procedure, are carried away by the aspirator tubes and are prevented from being discharged into the air towards the doctor. In another embodiment the tubes themselves function as cheek retractors.

3,735,492
DENTAL AMALGAM CARRIER

Jesse Karter, 7 Linden Lane, Old Westbury, Long Island, N.Y., and Patrick Cullen, 141-05 Northern Boulevard, Flushing, N.Y.

Filed July 29, 1971, Ser. No. 167,393
Int. Cl. A61c 5/04
U.S. Cl. 32—60 15 Claims



A lever-type dental amalgam carrier in which the amalgam tips of the carrier are unitized operating ends and are rapidly interchangeable. Various embodiments of spring locks, insert locks, thread locks, twist locks, collet locks and swivel locks for mounting the amagam tips on the handle of the carrier are disclosed.

3,735,493
HOPPLE MEASURING APPARATUS

Howard A. Hubbard, Sr., R.F.D. 1, Williston, Vt.

Filed Dec. 2, 1971, Ser. No. 204,051
Int. Cl. G01d 5/00
U.S. Cl. 33—125 R 3 Claims

Hopple measuring apparatus comprising a frame having a pair of supports vertically spaced, the upper support in a fixed position and the lower support vertically moveable between a pair of positions remote from the upper support, a weight connected to the lower support and moveable therewith, the upper portion of said weight extending to a position intermediate the upper and lower supports, and indicia beside the upper portion of the weight, indicating, by the position of the weight, the distance between the upper and lower supports.

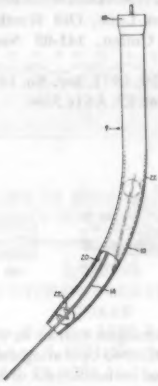
3,735,494
DIP STICK NORMALLY HOUSED IN CURVED FILLER TUBE

Herbert A. Gumtow, Brookfield, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed June 4, 1971, Ser. No. 149,911
Int. Cl. G01f 23/04
U.S. Cl. 33—126.7 R 2 Claims

A flat, rod-like dip stick, normally housed in a curved filler tube, and bowingly flexible to accommodate tube curvature, has a longitudinal slot therethrough above its indicating portion. A disc is anchored in the slot by abutments engaging the

flat faces of the dip stick. Projecting equally beyond said faces



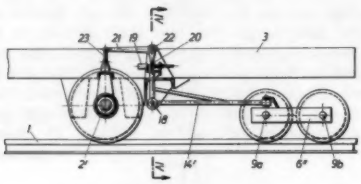
and normally seated near the bottom of the tube, the disc prevents the tube from wiping the dip stick during withdrawal.

3,735,495

MOBILE TRACK SURVEY APPARATUS FOR DETERMINING GRADE VARIATIONS

Franz Plasser, Vienna, and Franz Egleer, Ohlsdorf, both of Austria, assignors to Franz Plasser Bahnbaummaschinen Industriegesellschaft m.b.H, Vienna, Austria

Filed June 23, 1971, Ser. No. 155,862
Claims priority, application Austria, July 2, 1970, 5960
Int. Cl. G01b *5/20*
U.S. Cl. 33—144 **10 Claims**



A mobile chassis runs on a load-carrying running gear and carries a track sensing element which is mounted on the chassis for free vertical movement in respect thereto to sense the vertical position of the track it engages. A pair of bell crank levers are pivotally mounted on the chassis, with one arm of the levers connected respectively to the running gear and the sensing element while the other arm of the levers is connected to an electric measuring signal generator and transmitter which generates an electric measuring signal proportional to any pivotal movement of the bell crank levers.

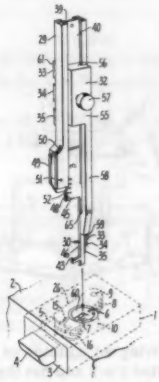
3,735,496

LOCK DECODER AND DECODING METHOD

David G. Lee, 2136 N. Orange Street, Stockton, Calif.

Filed July 6, 1971, Ser. No. 159,827
Int. Cl. B21k *13/00;* **B23c** *1/16*
U.S. Cl. 33—174 F **6 Claims**

A decoder and method for decoding certain lever tumbler locks. The locks include a case having an inner surface, a bolt with a fence, a cylinder with a keyway, and a column of lever tumblers, each having a gate. It is essential that the spacings between said inner surface and the near edge thereto of each tumbler, when the tumbler gates are aligned with the fence, be known and identical. It is also essential that the possible depth settings of the tumblers be known. The method involves determining by trial and error the key bit heights which will pivot said near edge of each tumbler flush against said inner surface and calculating the actual depth setting of each tumbler by subtracting said spacing between said ibner surface and said near tumbler edge from said determined key bit heights. The decoder includes a pair of interchangeable gage keys each of which has a bit with a height equal to the sum of one of the possible depth settings and said spacing between the inner sur-



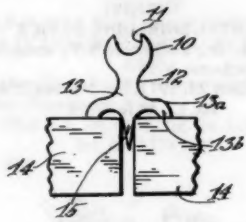
face and said near tumbler edge, means for adjusting the depth of said bit in the keyway to the plane of each tumbler and a trio of shims which are inserted into the keyway behind the bit to increase the bit height to heights equal to the sum of another one of the possible depth settings and said spacing between said inner surface and said near tumbler edge.

3,735,497

FLOORING SPACERS

William A. Boettcher, 4507 North Clarke Street, Chicago, Ill.

Filed May 6, 1971, Ser. No. 140,833
Int. Cl. G01b *5/14*
U.S. Cl. 33—180 R **3 Claims**



A piece usable to maintain a slight space between groups of laid floor boards until the floor has been fully laid. The piece has a head adapted to be grasped between the fingers, a pendent tongue insertible into the space, and a wide base with feet seating the piece squarely on the floor boards adjoining the space.

3,735,498

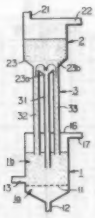
METHOD OF AND APPARATUS FOR FLUIDIZING SOLID PARTICLES

Yuichi Suzukawa; Hisashi Kono; Shigeyuki Nakai; Kohei Ninomiya, and Atsushi Kuribayashi, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi-ken, Japan

Filed Apr. 15, 1971, Ser. No. 134,276
Claims priority, application Japan, Apr. 21, 1970, 45/33460
Int. Cl. F26b *17/10*
U.S. Cl. 34—10 **20 Claims**

This invention relates to a method of and apparatus for fluidizing solid particles in such a manner that a large amount

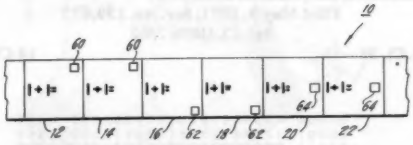
of the particles in circulated continuously within the subsequent fluidized bed. Such circulation phenomenon of the fluidized particles is provided in a new fluidized bed vessel having a lower chamber provided with a perforated plate for forming the fluidized bed, an upper chamber and an intermediate portion consisting of a plurality of conduits fluidly connected to both chambers. This technique may be employed effectively for catalytic reaction or sintering processes, mixing processes or drying processes of granulated particles, grain or the like, particularly for the processes requiring the transfer of a great amount of heat.



ERRATUM

For Class 34—227 see:
Patent No. 3,735,965

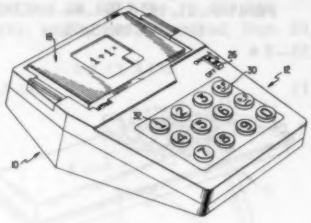
3,735,499
OPERATOR RESPONSE ANALYSIS MEANS AND METHOD
Joan Rosengren Forsdale, 38 Fourth Avenue, Nyack, N.Y.
Continuation-in-part of Ser. No. 737,094, June 14, 1968, abandoned. This application Dec. 24, 1970, Ser. No. 101,335
Int. Cl. G09b 3/02
U.S. Cl. 35—8 R **17 Claims**



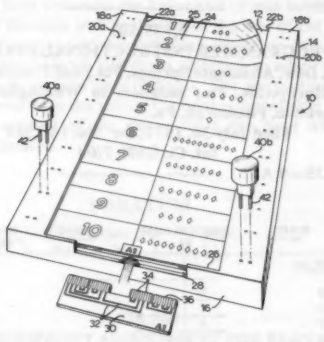
To determine how much information an operator receives before he responds to a stimulus, information is presented in a predetermined sequence. The information is programmed on an image source holding means, e.g. motion picture film. On each image is a response location, which is different for each image. The place where the operator responds shows how much information he received. The shifting response location also serves as a timing means for clocking the operator's response if the images are changed after predetermined intervals.

3,735,500
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company Ltd., Tokyo, Japan
Filed Dec. 15, 1970, Ser. No. 98,382
Int. Cl. G09b 7/06
U.S. Cl. 35—9 A **17 Claims**

A toy for teaching young children basic educational and social concepts, e.g., arithmetic, time-telling, etc. The subject matter is visually presented as indicia on a movable tape positioned in a cassette. The cassette is adapted to be snapped into a housing and interacts with the battery circuit provided therein. The tape is also coded to program the circuit, acting in conjunction with a keyboard. The tape is advanced only when the correct keyboard button is depressed indicating to the user that the problem has been solved. Different cassettes are provided for each subject matter.



3,735,501
EDUCATIONAL TOY
Edmund Ma, 20 Graydon Hall Drive, Apt. 209, Don Mills, Ontario, Canada
Filed Oct. 12, 1971, Ser. No. 188,134
Int. Cl. G09b 7/10
U.S. Cl. 35—9 C **5 Claims**

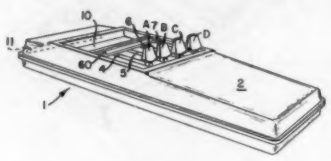


A toy having a housing provided with at least two sets of double-pole electrical terminals on an exterior face. Two signalling lamps are provided and each may be electrically connected to any double-pole electrical terminal. A card imprinted with a different numeral or other indicium is removably mounted to the panel and when so mounted, each different indicium is positioned beside a different double-pole terminal. In one embodiment of the toy, a printed circuit board electrically inter-connects each double-pole terminal in one set with a different terminal in the other set. The lamps are illuminated when they are connected to double-pole terminals electrically inter-connected via the circuit board. In a second embodiment of the toy, the card is provided with teeth along one edge. When the card is mounted to the housing, the teeth serve to open some but not all of a number of switches each of which, in its normally closed position, interconnects pairs of double-pole terminals. The lamps are illuminated when they are connected to terminals electrically inter-connected via switches not opened by the teeth. In both embodiments, the card is matched with the circuit board or the teeth such that the indicia beside electrically inter-connected terminals bear some relationship to one another.

3,735,502
HAND HELD TEACHING MACHINE

David A. Horine, Santa Clara County, Richard B. Ball, Palo Alto, both of Calif., assignors to Enrich, Palo Alto, Calif.

Filed Dec. 21, 1970, Ser. No. 100,312
Int. Cl. G09b 3/06
U.S. Cl. 35—9 A 9 Claims

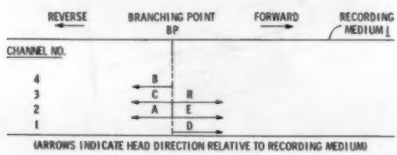


A hand held manually operable teaching machine is disclosed herein comprising a replaceable cartridge containing a web, typically an endless or Z-folded web and a plurality of manually operated slideable web-advancing means. The web is used for displaying frames of material to which a response is intended. Each frame of material on the web is provided with a web advancing hole at a predetermined location on a line transverse to the web in association with an appropriate one of several possible responses displayed with the material. The advancement of a pre-determined one of the web-advancing means will engage the hole associated with a correct response and advance the web for presenting another frame of material, thus indicating a correct response had been made by the operator.

3,735,503
PROGRAMMED INSTRUCTIONAL SYSTEM

Bruce R. Dow, Altamonte Springs, Fla., and Francis T. Thompson, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 30, 1971, Ser. No. 167,581
Int. Cl. G09b 7/04
U.S. Cl. 35—9 A 7 Claims



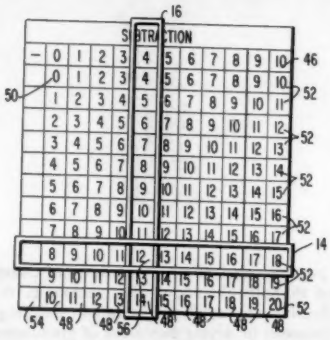
In an instructional system including a multi-channel recording/reproducing medium having stored thereon recorded material in the form of instructions, lectures, questions, remedial material, reinforcing material, channel transfer codes, etc. and including listener operated response switches for entering responses following reproduction of a lecture and question.

The listener response occurs at a branching point in the multichannel recording medium. The entering of a response by actuating listener selected switches results in the reproduction of material on a specific channel and in a predetermined direction. Each of the numerous possible listener responses results in the reproduction of material tailored specifically for that one response. The presence of recorded code signals following the segments of material reproduced following a listener's response serves as a transfer signal to assure reproduction of all the material on the various channels and in the proper direction necessary to complete the material appropriate to the response. The completion of the reproduction of this material reestablishes the system at the branching point.

3,735,504
ARITHMETIC TEACHING AID

Charles Fedyna, 32 Kileher Avenue, Youngstown, Ohio

Filed June 29, 1971, Ser. No. 157,986
Int. Cl. G09b 19/02
U.S. Cl. 35—31 C 2 Claims

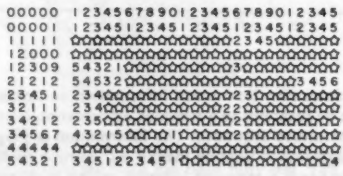


An arithmetic teaching aid. A problem board has on its first side a plurality of rows and columns, the intersections of which define locations, and arithmetic designations within those locations and on its second side a like plurality of rows and columns, the intersections of which likewise define locations, and additional arithmetic designations within those locations. Indicating means permit the indication of selected ones of the first side arithmetic designations to present a problem to a student while simultaneously indicating to a tutor the problem and the answer to that problem on the problem board second side.

3,735,505
RESPONSE CARD AND QUALITATIVE RESPONSE ANALYZER AND METHOD

Charles R. Stein, Schenectady, N.Y., assignor to Instructional Industries, Inc., Ballston Lake, N.Y.

Filed May 3, 1971, Ser. No. 139,673
Int. Cl. G09b 7/00
U.S. Cl. 35—48 14 Claims



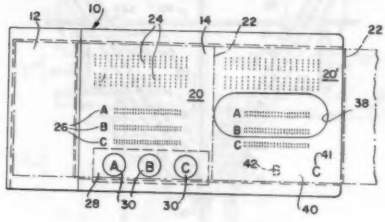
A response processing system and method are disclosed wherein responses to prepared questions are made by marking appropriate areas on a card. The card is then fed to a reader/processor where a unique character substitution is made. The reader/processor prints out, via a conventional teletypewriter, the nature of the response of each person answering the questions. The substitution of a unique character enables one viewing the print-out to obtain a "feel" for the nature of the responses to each question by each person without using a computer to evaluate the results. In addition, each card bears an identification number, marked by the respondent, utilizing a bi-quinary code. The identification number in this form enables the response information to be fed to a computer for quantitative analysis.

3,735,506

TEACHING AND TESTING DEVICE

Heinz Kunert, Belvederestrasse 155, 5 Koln-Mungersdorf 41, Germany

Filed Apr. 16, 1971, Ser. No. 134,749
Int. Cl. G09b 3/08
U.S. Cl. 35—9 F 2 Claims



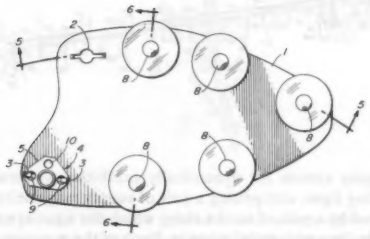
A teaching and testing device wherein the taught material is printed on an elongated strip of material, such as paper which is wound into a cassette. The printed matter is made available in stepwise increments from the cassette through a display sleeve from whence the knowledge is imparted. The sleeve has areas for marking answers to posed questions said areas may be marked with a perforation instrument affixed integrally to said sleeve.

3,735,507

ATHLETIC SHOE SPIKE ANCHOR PLATE

Edward H. Granger, South Yarmouth, Mass., assignor to F. C. Phillips Incorporated, Stoughton, Mass.

Filed June 2, 1972, Ser. No. 259,233
Int. Cl. A43b 23/28
U.S. Cl. 36—59 R 4 Claims



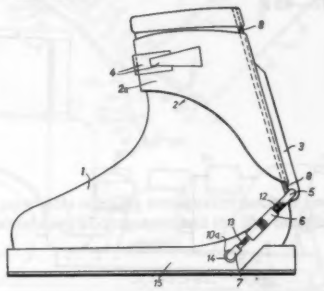
A spike anchor plate made of a flat thin sheet of metal bored with a plurality of holes corresponding substantially in number and position with spike receptacles to be mounted on said sheet. A pair of tabs is cut from said sheet at the sides of each of said holes and bent downwardly to extend solely from the lower face of said sheet. Spike receptacles to be mounted in the sheet are provided with a base plate having a pair of holes each slightly wider than the width of said tabs. These receptacles are mounted on the bottom of the sheet by having the tab project through such holes and being bent over the lower face of such base plate to retain the receptacle on such sheet with a substantial degree of freedom of motion with respect to the sheet. This freedom of motion permits the receptacles to move into accurate seating engagement with corresponding portions of a sole plate mold substantially independently of the accuracy of their positions on the sheet. Once in place on the mold, a shoe bottom of a moldable elastomer is molded around the spike anchor assembly. Spikes may be inserted into the receptacle either before or after molding.

3,735,508

SKI BOOT HAVING A STIFFENING SLEEVE

Ernst Gertsch, and Ulrich Gertsch, both of Bern, Switzerland, assignors to Gertsch AG, Interloken, Switzerland

Filed Sept. 28, 1971, Ser. No. 184,364
Claims priority, application Switzerland, Sept. 29, 1970, 14373/70
Int. Cl. A43b
U.S. Cl. 36—2.5 AL 11 Claims



A stiffening sleeve for ski boots surrounds the top portion of the upper of the ski boot and is composed of two like sleeve portions, parts which are attached at the rear of the boot to an elongate holding part formed as a rib or rod extending upwardly along the upper from the heel portion of the boot. A device for adjusting the position of the stiffening sleeve on the upper of the boot connects the lower end of said holding part at the rear of the boot with both sides of the sole of the boot to permit an adjustment of the stiffening sleeve on the boot in lateral direction or in up and down direction to adapt the stiffening sleeve to various sizes of boots. The connection of the adjusting device with the sole of the boot is detachable so as to allow easy removal of the sleeve from the boot when the sleeve is not desired.

ERRATUM

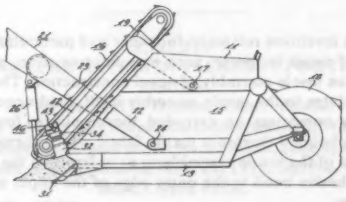
For Class 36—44 see:
Patent No. 3,735,511

3,735,509

ELEVATOR SUPPORT ADJUSTMENT FOR ELEVATING SCRAPER

James Condra, Springfield, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 18, 1972, Ser. No. 227,432
Int. Cl. E02f 1/36; F16h 53/00
U.S. Cl. 37—8 2 Claims

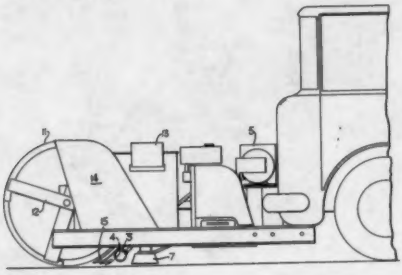


The vertically swingable endless belt elevating mechanism disposed in the open front end of a scraper bowl has its lower end held at a selected height above the cutting edge by adjustable support members which may be rotated to effect different elevations for the lower end of the elevating mechanism.

3,735,510
DEVICE FOR REMOVING SNOW

Lonard Robert Godfrey, and John Daniel Cook, both of Chepstow, South Wales, assignors to Dendix Brushes Limited, South Wales

Filed Dec. 8, 1971, Ser. No. 205,974
Claims priority, application Great Britain, Dec. 10, 1970, 58,806/70
Int. Cl. E01h 5/00; B60v 1/00
U.S. Cl. 37—43 R 13 Claims

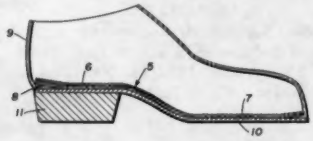


A device for removing snow comprises a chamber having a forward-facing horizontal slit in it from which air, supplied by a compressor, leaves, preferably with a velocity of at least 50 miles per hour, and lifts, by up to a few inches, snow on the surface to be cleared. Rotary displacing means, for example an auger or rotary brush, on the device displaces the lifted snow away from the path of movement of the device. The slit extends along substantially the whole length of the rotary displacing means, substantially parallel to the axis of rotation, and air from the slit passes, substantially perpendicular to said axis, under said rotary displacing means to lift the snow in front of the latter.

3,735,511
FOOTWEAR

John H. Gilbert, Chepstow, and Donald Weight, Chalfont, St. Giles, Buckinghamshire, both of England, assignors to Monsanto Chemicals Limited, London, England

Filed Oct. 15, 1971, Ser. No. 189,558
Claims priority, application Great Britain, Oct. 23, 1970, 50504/70
Int. Cl. A43b 13/38
U.S. Cl. 36—44 16 Claims



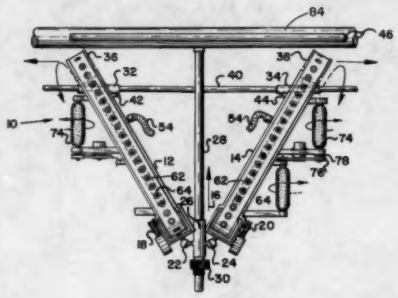
This invention relates to footwear and particularly to an article of outer footwear, such as a boot or shoe, which comprises an insole assembly of novel construction. The invention also relates to the insole assembly itself. Said novel insole assembly comprises an extruded thermoplastic foamed sheet having bonded thereto a textile fabric which forms the lower surface of the insole assembly so as to improve the strength of the adhesive bond to the outer edge of the upper and the sole proper.

3,735,512
SHEET FEEDER AND SPREADER MEANS

Abe D. Ross, 1400 West Tahiti Way, Marina Del Ray, Calif.

Filed June 18, 1971, Ser. No. 154,395
Int. Cl. D06f 67/04
U.S. Cl. 38—143 10 Claims

Flatwork handling apparatus for carrying laundered flatwork to ironing rollers comprises a pair of obliquely arranged feeder and spreader members including a vacuum chamber which is utilized to apply a vacuum or suction force to the flatwork. As the flatwork is fed toward the ironing rollers, the



oblique relationship of the feeder and spreader members causes a transverse spreading action to be applied to eliminate creases and wrinkles in the laundered sheets, tablecloths, etc.

3,735,513
DYNAMIC ADVERTISING DISPLAY SYSTEM

Paul C. Constant, Jr., Kansas City, Mo.; Walter Hodge, Shawnee Mission, Kans.; Frank Barker, Kansas City, Kans., and Edward S. Keller, Shawnee Mission, Kans., assignors to Don Fedderson Productions, Inc., Studio City, Calif.

Filed Feb. 25, 1971, Ser. No. 118,662
Int. Cl. G09f 11/28
U.S. Cl. 40—32 19 Claims

A display system for dynamically exhibiting a plurality of advertising signs, comprising a pair of supply magazines interconnected by a pair of tracks along which the signs are moved for display in a sequential manner. Each of the magazines supports a supply of stacked signs and has a sign discharge station wherein the signs are coupled with a drive cable one at a time and moved along one of the tracks, and also has a sign receiving station which receives the signs from the other track after display and uncouples the signs from the drive cable. A push frame assembly of the magazine automatically shifts each sign from the receiving station into the supply stack after the sign enters the magazine from one of the tracks and simultaneously positions a new sign from the supply stack in the discharge station for movement along the other track.

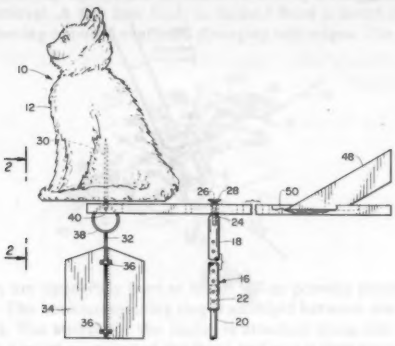
3,735,514
BIRD FRIGHTENING DEVICE

John K. Asder, 310 W. Foothill Boulevard, Arcadia, Calif.

Filed Apr. 21, 1971, Ser. No. 135,961
Int. Cl. G09f 11/02
U.S. Cl. 40—39 7 Claims

A bird frightening device including a likeness of a cat connected to a platform, the platform being horizontally balanced upon a stanchion, the platform being pivotable in a horizontal plane with respect to the stanchion, the cat likeness being connected to the platform by a pin and loop arrangement to permit low frictional three dimensional movement of the likeness

with respect to the platform, the movement of both the likeness and the platform being effected by wind currents contacting a vane, the vane being connected to both the likeness and the platform.



3,735,515

INDICATION CLIP FOR FILING CARDS OR THE LIKE

Harry Lagert, Kalbakken, Oslo, Norway, assignor to Thorlag Mek Verksted, Oslo, Norway

Filed Apr. 22, 1971, Ser. No. 136,311

Claims priority, application Norway, Apr. 23, 1970, 1554/70

Int. Cl. B42f *21/06*

U.S. Cl. 40—23 A **5 Claims**

The present invention relates to indication clips comprising two separate sheet members which are held together at engaging portions in such a manner that a holding means is formed between them for an indication sheet as well as a slit for the insertion of an edge portion of a filing card or the like, the sheet members on both sides of the slit being urged by their inherent elastic force towards said edge portions so as to hold it.

3,735,516

POCKETED ALBUM PAGE

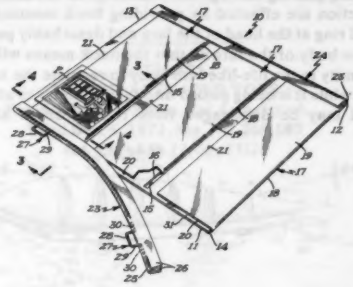
Roger A. Wenstrom, St. Cloud, Minn., assignor to The Holes-Webway Company, St. Cloud, Minn.

Filed Apr. 6, 1972, Ser. No. 241,514

Int. Cl. G09t *7/00*

U.S. Cl. 40—104.18 **3 Claims**

A pocketed album page and process of making the same comprises the steps of the die-cutting a sheet of album page material to form slots in the sheet. The sheet is cut into page size blanks and folded transparent pocket forming member is applied through each slot in the page blank, and against the lower transverse edge of the blank. Attachment strips are secured to opposite longitudinal edges of each blank and to the edge portions of the pocket forming members. One of the attachment members has hinge elements attached thereto to permit binding of each page to album covers. Each album page has upwardly opening transparent pockets one each side of accommodating photographs and the like therein.



3,735,517

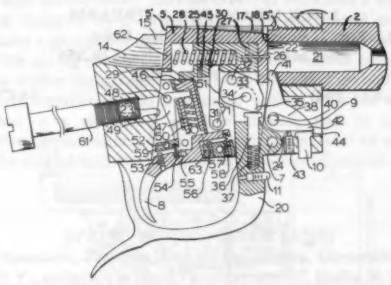
FALLING BREECH BLOCK ACTION FOR A SINGLE SHOT FIREARM

Frank De Haas, Orange City, Iowa, and Dean E. Miller, St. Onge, S. Dak.

Filed June 14, 1971, Ser. No. 152,535

Int. Cl. F41c *11/04*

U.S. Cl. 42—23 **8 Claims**



A hammerless falling breech block action for a breech loading single shot firearm which has a breech block within a recess in the receiver and which is raised and lowered by a finger lever pivoted under the receiver.

ERRATUM

For Class 42—70 see:
Patent No. 3,735,519

3,735,518

FISHING LURE HAVING DETACHABLY POSITIONED HOOKS

Richard A. Kleine, 6017 Trenton Lane, Peoria, Ill., and Stanley I. Meier, 821 Magdeline Drive, Madison, Wis.

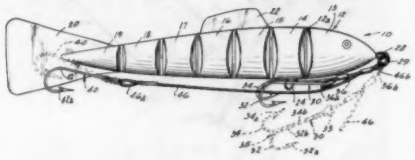
Continuation-in-part of Ser. No. 829,355, June 2, 1969, abandoned. This application Mar. 19, 1971, Ser. No. 126,063

Int. Cl. A01k *85/02*

U.S. Cl. 43—42.04 **31 Claims**

A fishing lure having a series of jointed segments formed about a thin flexible gauze material and having the gauze material extend outwardly of the individual segments to form fin and tail portions for the lure. The lure has a flexible wire extending axially thereof and against the flexible gauze material. The wire has a series of loop portions formed at intervals along the length thereof and extending outwardly of the body

segments to form loop protrusions where hooks can be fastened to complete the lure. Variance in the motion of a fishing lure moving through the water as well as efficiencies of construction are effected by providing hook means attached to a lead ring at the head of the lure and detachably positioned along the body of the lure so that the hook means will remain in proximity to the life-like lure body to regulate the motion of the lure while it is being pulled through the water to attract the fish and may be disengaged from their position along the



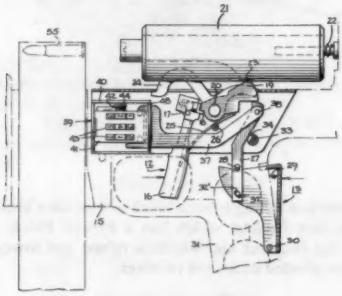
length of the body by the striking or fighting fish with the further results that the leverage given by the lure body to the striking fish in assisting it in rejecting the hook is eliminated while at the same time the fight of the striking fish against the hook may be removed from the area of the lure body. A slot means in a double hook allows detachably connecting the hook means in various positions on the lure so that movement characteristics of the fishing lure as it is pulled through the water may be varied.

3,735,519

LOCK MEANS FOR A FIREARM

Gerard J. Fox, 21 Shore Drive, Meriden, Conn.

Filed Mar. 26, 1971, Ser. No. 128,356
Int. Cl. F41c *17/08*
U.S. Cl. 42—70 D 14 Claims



The lock slide is hinged to the safety bar and the combination lock is used to lock the lock slide against movement so as to prevent movement of the safety bar. This prevents the sear from pivoting away from the bolt. Upon release of the lock slide, the safety bar is free to be moved upon actuation of the grip safety if the thumb safety is off.

3,735,520

LURE DISLODGING AND RETRIEVING DEVICE

Harry M. Jarrett, 20 Roberts St., Bradford, Pa.

Filed Mar. 9, 1971, Ser. No. 122,363
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 7 Claims

A lure dislodging and retrieving device comprising a cylindrical weighted body having a downwardly tapering conical bore opening through top and bottom ends and a line inserting slot permitting the body to be fitted over the fishing line. The respective top and bottom end portions are provided with encircling grooves for reception and retention of top and bottom assembling and keying lips carried by yieldable flanges on the end caps. These caps are turnable and also provided with slots which can be registered with the line slot. A line wedging and releasing ball is normally lodged in the lower tapered end of

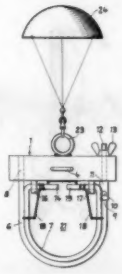
the bore. Selectively usable facilities are provided on the body and top end cap for attaching the lower end of a retrieving line.

3,735,521

DEVICE FOR DISENGAGING AND RECOVERING FISHING GEAR

Constantin A. Krylov, Bld. 701, Apt. H, Garmisch-Breitenau, Germany

Filed Feb. 17, 1972, Ser. No. 227,526
Claims priority, application Germany, Nov. 20, 1971, P 21 57 717.3
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 6 Claims



A device for disentagling and recovering fishing gear entangled or hooked below the water surface comprising a frame, a recovery line, and a first ring member on said frame for fastening said recovery line. First and second jaw means of U-shaped form are at substantially right angles to said first ring member, said first jaw means being fastened to said frame, said second jaw means being hingeably connected to said frame so as to open opposite said first jaw means when actuated. A tiltable member is connected with said first jaw means and rotatable in the plane of said first jaw means for inserting the fishing line. After releasing the recovery line, the device slides forward and rotates and simultaneously part of the fishing gear moves between the two jaw means.

3,735,522

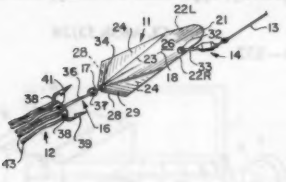
FISHING LURE

Richard R. Thomas, 407 Ninth Avenue, Menlo Park, Calif.

Filed Aug. 24, 1970, Ser. No. 66,452
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.28 9 Claims

An attachment for a gang hook has a resilient ring with a plurality of integral, depending, thin, flexible legs. The ring is

stretched to slip over the hooks and loosely encircle the shank of the hook. The legs extend beyond the barbs and function to insure that the hook trails from the lure body during casting and retrieval. A fish lure body is formed from a metal sheet blank having outward-rearward diverging side edges. The rear



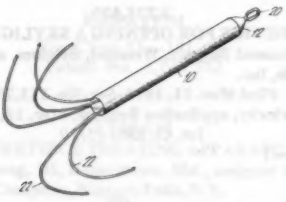
corners are oppositely bent at about 90° to provide propellor blades. The hook-connecting ring is attached between the rear corners. The swivel for the leader is attached along one side edge at a point rearward of the front end and is thus eccentric to the longitudinal central axis. An erratic spinning action results during retrieval.

3,735,523

FISHING SINKERS

Richard L. Merrill, King City, Calif., assignor to The Lee, Raymond Organization, Inc., New York, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,302
Int. Cl. A01k *91/00*
U.S. Cl. 43—44.96 **4 Claims**



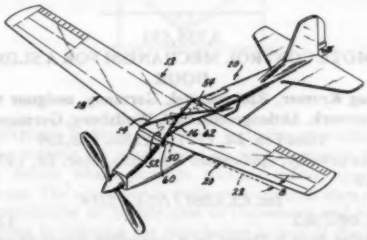
An elongated hollow tube has one flared end and an opposite conically shaped end. A rod extends axially through the tube with one end extending beyond the conically shaped tube end and having an eye. A lead weight is disposed within the tube adjacent the conical end. Tines extend through the flared end and guide grooves to a steel ring in the tube and slidable along the rod. A coil spring is disposed in the tube concentrically about the rod betwen disc and weight.

3,735,524

WING ASSEMBLY FOR TOY AIRPLANES

William A. Staats, Torrance, and Denis V. Bosley, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed July 19, 1972, Ser. No. 273,081
Int. Cl. A63h *27/00*
U.S. Cl. 46—76 **11 Claims**



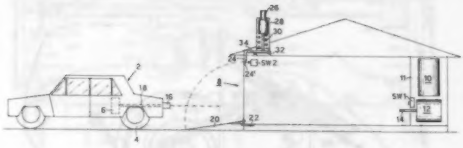
A wing assembly for a toy airplane including a pair of wing halves with interfitting inner ends that lie on the airplane fuselage, the inner end of each wing half including at least one projection with an enlarged head and at least one undercut recess so that the wing halves form an interlocking joint with each other.

3,735,525

MOTOR-ACTUATED TOYS

Marvin J. Freed, 8 Levitan Street, Tel Aviv, Israel

Filed Dec. 6, 1971, Ser. No. 205,187
Int. Cl. A63h *11/00, 33/26*
U.S. Cl. 46—202 **10 Claims**



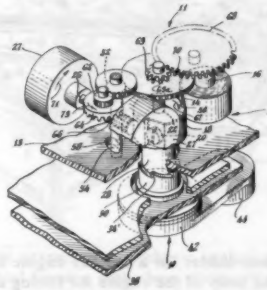
Motor-actuated toys comprise a first member simulating a movable object having a moving part and containing motive means for driving the moving part, and energy storage means for storing energy for the motive means; and a second member simulating a fixed object normally associated with the movable object and including recharging means for recharging the energy stored in the storage means when the simulated movable object member is placed at a predetermined location with respect to the simulated fixed object member. In one described embodiment, the first member simulates a wheeled vehicle actuated by a spring motor, and the second member simulates a garage containing an electric motor adapted to rewind the spring motor when the simulated vehicle member is placed within the garage. In a second described embodiment, the first member is also a wheeled vehicle, but the second member is a simulated gasoline station; and in a third described embodiment, the first member simulates an animal, and the second member simulates a cage for the animal.

3,735,526

SPRING WIND-UP MECHANISM

Burt Ensmann, Flushing, and Edwin Nielsen, Oceanside, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.

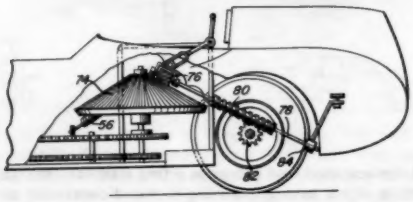
Filed Mar. 22, 1971, Ser. No. 126,817
Int. Cl. A63h *11/10*
U.S. Cl. 46—202 **16 Claims**



A mechanism is described for winding spring-driven toys. A clutch arrangement is employed wherein a driven clutch member of the toy spring drive is positively engaged by a driving clutch member of the wind-up mechanism. The clutch members are provided with teeth which engage in a positive and vertically retaining manner. The clutch arrangement provides a quickly engageable and releasable spring wind-up connection which is particularly useful as a fast "pit stop" with top vehicle racing games and with toy vehicle launchers. A

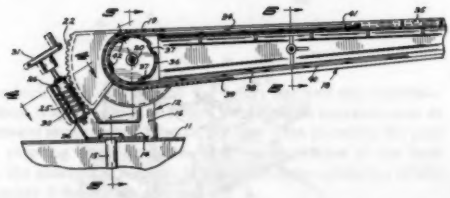
vehicle launcher utilizing the wind-up clutch is described, wherein a pivotally mounted platform is inclined to convert it from a spring wind-up support surface to a toy vehicle launch ramp.

3,735,527
VARIABLE SPEED TOY TRANSMISSION
Joseph Lombardo, 1103 1st Avenue, New York, N.Y.
Filed Feb. 3, 1972, Ser. No. 223,263
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 7 Claims



A variable speed transmission for toy vehicles comprising a motor driven drive shaft mounting drive gear means of progressively changing diameter, the drive gear means selectively engaged at points of different diameter by a driven gear which drives a propulsion means through an elongated shaft. The driven gear is shifted relative to the drive gear means by a manually controlled lever spring biased to releasably retain an engagement of the drive and driven gears. The lever includes a selector bar which cooperates with positioning plates to set selected relationships between the drive and driven gears.

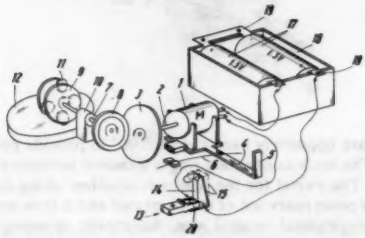
3,735,528
LADDER FOR TOY FIRE ENGINE
Theodore H. Zbikowski, Plymouth; Ronald R. Pauly, Mound, and Lee J. Pfeilsticker, Long Lake, all of Minn., assignors to Tonka Corporation, Minneapolis, Minn.
Filed Feb. 14, 1972, Ser. No. 226,095
Int. Cl. A63h *17/08*
U.S. Cl. 46—215 3 Claims



An extension ladder for a toy fire engine having one end pivoted to the body of the engine for raising and lowering of the ladder about a horizontal axis, a crank and gear means acting between the body and ladder for effecting said movement, said crank and gear means including a spring means yieldably retaining gears in meshing engagement and allowing said gears to disengage when the ladder is forcibly moved about said axis to prevent breakage of the crank and gear means.

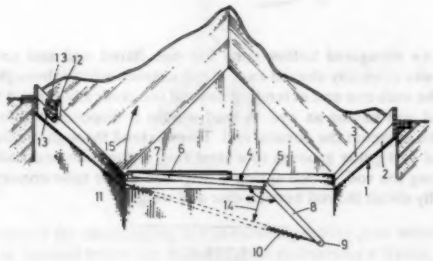
The base section of the extension ladder is formed of flexible material and is disposed in a track and trained over a reel to be wound outwardly or inwardly to respectively extend or retract the ladder.

3,735,529
NOISE PRODUCING DEVICE
Georg Rosien, Nurnberg, Germany, assignor to Schuco-Spielwarenwerke Schreyer & Co., Nurnberg, Germany
Filed Dec. 22, 1971, Ser. No. 211,009
Claims priority, application Germany, Dec. 24, 1970, P 20 63 882.8
Int. Cl. A63h *33/26*
U.S. Cl. 46—232 11 Claims



Means for imitating the noises of an automobile engine for use in toy vehicles which include a simulated accelerator pedal as an adjusting means, an electric motor, a noise producing device driven by the motor under control of the pedal which is adjustable to change the frequency and the sound volume of the noise produced by the device.

3,735,530
DEVICE FOR OPENING A SKYLIGHT
Pierre Emmanuel Bogaert, Wemmel, Belgium, assignor to Vic Chemicals, Inc.
Filed Mar. 11, 1971, Ser. No. 123,287
Claims priority, application Belgium, Mar. 12, 1970, 86328
Int. Cl. E05f *15/20*
U.S. Cl. 49—7 7 Claims

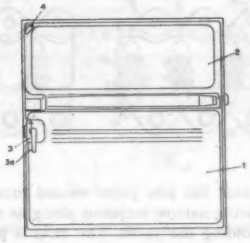


A device for opening a skylight, particularly for opening same automatically in case of fire. Use is made of a lever attached to the skylight casing and the leverage of which is so designed as to compensate the changing force of an operating spring.

3,735,531
REMOTE CONTROL MECHANISM FOR A SLIDING DOOR
Wolfgang Kramer, Ribbesbuttel, Germany, assignor to Volkswagenwerk, Aktiengesellschaft, Wolfsburg, Germany
Filed Feb. 24, 1971, Ser. No. 118,339
Claims priority, application Germany, Mar. 18, 1970, P 20 12 832.9
Int. Cl. E05f *11/54*, *15/14*
U.S. Cl. 49—362 12 Claims

A sliding door is closed by a reversible power-driven slide, movable horizontally and having a hook normally coupled to a

detent on the door for causing the door to move with the slide in a closing direction. A coupling hook pivoted on the slide, and spring loaded toward operative position, is retracted or uncoupled from the detent at the conclusion of the door closing movement by the engagement of a retracting lever arm on the hook with a fixed stop, thus releasing the door from the



slide so that it may be subsequently manually opened. For opening of the door by remote control, a return or reverse movement of the slide, and its abutting engagement with the detent, transmits opening movement to the door while, at the same time, reengaging the hook for use in subsequently closing the door by remote control.

ERRATUM

For Class 51—181 see:
Patent No. 3,735,542

3,735,532

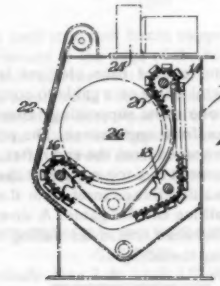
WORKPIECE TREATING APPARATUS

William W. Long, III, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 859,991, Sept. 22, 1969, abandoned. This application May 4, 1971, Ser. No. 140,199

Int. Cl. B24c *3/14, 3/24, 3/30*

U.S. Cl. 51—9 **9 Claims**



A workpiece treating apparatus includes an endless conveyor for moving the workpieces therein to expose them to treating means which projects treating media against the workpieces. The conveyor is made of individual slats extending perpendicular to its direction of movement and each slat has grooves to enhance the ricocheting action of the treating media.

3,735,533

SHARPENING OF ICE SKATES

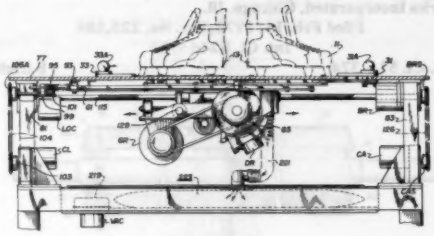
Mervyn Salberg, British Columbia, Canada, assignor to Merco International Ltd., British Columbia, Calif.

Filed Apr. 27, 1971, Ser. No. 137,789

Claims priority, application Canada, Feb. 12, 1971, 105211

Int. Cl. B24b *19/00*

U.S. Cl. 51—34 E **10 Claims**



A coin-operated automatic ice skate sharpening machine is disclosed. The two skates are arranged heel-to-heel and the two aligned edges ground by a thin, flat grinding wheel having a convex wheel edge profile. The wheel lies in the same plane as the skate blades. The wheel moves along the skates, so grinding a concave edge profile. The machine can be set grind either "figure" skates or "hockey" skates as desired. The grinding wheel is automatically dressed. The number of passes by the grinding wheel is preset by the operator to take into account present condition of skates.

3,735,534

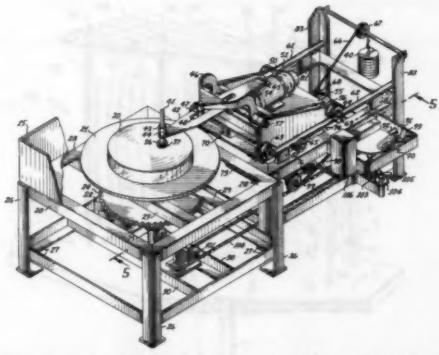
APPARATUS FOR CONTROLLED LAPPING OF OPTICAL SURFACES TO CORRECT DEVIATIONS FROM DESIRED CONTOURS

Marvin J. Mayo, Van Nuys, Calif., assignor to Altair Scientifics, Inc., Van Nuys, Calif.

Filed Feb. 10, 1971, Ser. No. 114,114

Int. Cl. B24b *13/00*

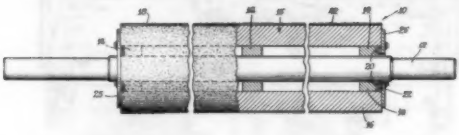
U.S. Cl. 51—57 **5 Claims**



Apparatus for scanning an aspheric optical surface in a spiral pattern and lapping with short strokes is provided by rotating a table supporting the workpiece at a controlled rate, radially moving an arm carriage, and cyclically driving the arm on the carriage with a crank to produce short lapping strokes along the spiral scanning path. A program prepared from contour deviation plots along several diameters of the workpiece (made by knife-edge measurement techniques) control the rate of rotation of the workpiece inversely proportional to deviations from the desired surface contour. After repeated use of one program has reduced deviations by at least half, measurements are again made and a new program is prepared.

Each iteration of a given program is run at a rate which assures completion of the entire program in an interval of time during which the rate of material removal will not vary by more than 10 percent.

3,735,535
EXPANSIBLE WHEEL
Gustav Martin Waller, Geneva, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Feb. 11, 1972, Ser. No. 225,586
Int. Cl. B24d 9/02
U.S. Cl. 51—374 **8 Claims**

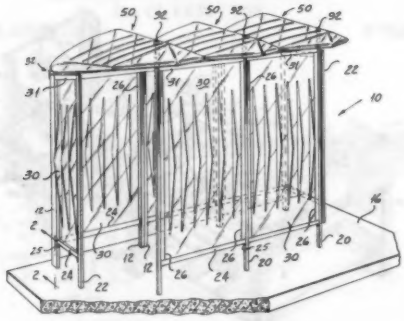


A rotatable hub supports solid rim segments movable relative thereto between a first position relatively close to the hub in which a flexible, abrasive sleeve is not engaged, to a second position in which the sleeve is engaged, to a third position relatively far from the hub. Springs and centrifugal force both urge the rim segments away from the first position.

ERRATA

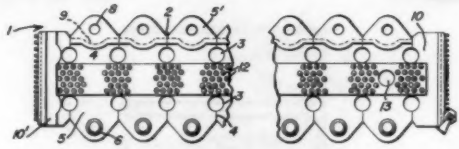
For Classes 51—225, 51—238, and 51—284 see: Patents Nos. 3,736,113 thru 3,736,115

3,735,536
BUS STOP SHELTER
Gerald J. Bellasalma, West Caldwell, N.J., assignor to Plastetics Inc., Fairfield, N.J.
Filed May 7, 1971, Ser. No. 141,238
Int. Cl. E04b 1/34; E04h 1/12
U.S. Cl. 52—73 **7 Claims**



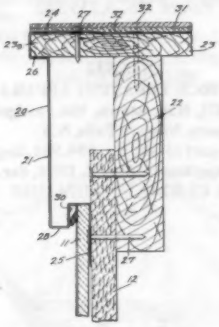
The invention relates to a modular building construction such as a bus shelter or the like in which each pair of adjacent spaced uprights carry an H-shaped extrusion providing an elongated upper channel in which an inwardly directed generally horizontal back flange of a molded plastic roof section rests. An elongated extruded retainer element is secured to the cross piece of the H so as to clamp the flange between the cross piece and the retainer with an upwardly and rearwardly extending portion of the retainer helping to support the roof section in cantilever fashion and with gutter-forming elements associated with adjacent edges of a pair of roof sections to carry water away from the shelter roof formed by the sections.

3,735,537
CARPET BASE ELEMENT
Bent Jorgen Panker, Bregnerodvej 3450, Allerod, Denmark
Filed Dec. 17, 1970, Ser. No. 99,045
Claims priority, application Denmark, Dec. 23, 1969, 6817
Int. Cl. E04c 2/40
U.S. Cl. 52—660 **10 Claims**



A carpet element has pile yarns wound round a backing material strip having narrow incisions along its side edges for receiving and holding the yarns. The strip is provided with connecting means along its edges for connecting the strip with other similar strips.

3,735,538
POCKET RAKE FOR GABLE SIDING CONCEALING A ROOF EDGE
Gunars H. Ramins, 1709 LaRue Lane, Warrington, Pa.
Filed Sept. 15, 1971, Ser. No. 180,630
Int. Cl. E04b 7/02
U.S. Cl. 52—94 **2 Claims**

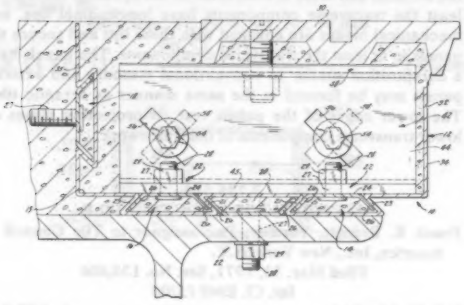


A one-piece metal pocket rake element is provided for cooperating with metal siding on a gable to conceal an edge of a roof and an end one of its supporting rafters to provide a structure having a uniform appearance. The pocket rake element has a face web spaced from the end rafter, an upper nailing flange for securement to a top margin at the roof along its edge, and a lower nailing flange inset from the face web for securement to sheathing on the gable. A downwardly open recess is provided between the lower nailing flange and the face web for receiving the siding.

3,735,539
MOUNTING ASSEMBLY FOR ELEVATOR DOOR SILL
Alvin F. Pfund, Demarest, N.J., assignor to Dahlstrom Corportation, Jamestown, N.Y.
Filed Oct. 26, 1971, Ser. No. 192,530
Int. Cl. E06b 1/70
U.S. Cl. 52—98 **8 Claims**

A mounting assembly for accurately positioning an elevator door sill at the elevator opening after a concrete floor has been poured and dired is disclosed. The mounting assembly

includes a housing having means for accurately positioning the assembly prior to pouring a concrete floor and means for adjustably mounting the sill at the elevator opening in rigid fixed position.

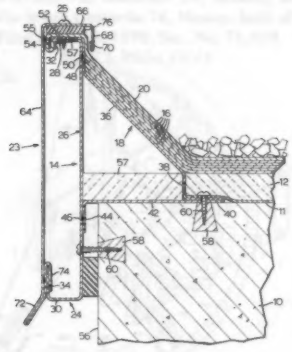


3,735,540

BUILDING FASCIA

Kunibert Thaler, P.O. Box 53, Morningdew Road, Westhill, Ontario, Canada

Filed Dec. 10, 1970, Ser. No. 96,985
Int. Cl. E04d *13/15*
U.S. Cl. 52—94 15 Claims



A combined cant strip and fascia support structure is provided for attachment to the edge of the roof and a roof flashing is gripped between the cant strip and fascia support when the structure is assembled. The roof flashing is adapted to extend from the structure over a portion of the roof adjacent the roof edge and a fascia is clipped over the structure and screwed in place to prevent damage to the waterproof covering and to improve the appearance of the structure.

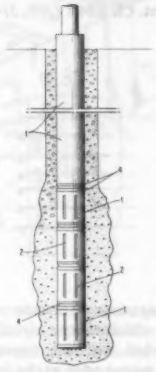
3,735,541

METHOD AND DEVICE FOR ANCHORING TIE-RODS IN GROUND

Walpy Vanderlinde, Rua 7 de Abril 127-9th Flaar, Sao Paulo, Brazil

Filed July 8, 1971, Ser. No. 160,684
Int. Cl. E02d *5/80*
U.S. Cl. 52—98 14 Claims

A tie-rod or cable is anchored in the earth by drilling a hole in the soil or rock and placing in the hole a double-wall casing comprising spaced inner sleeves and outer sleeves. Annular spacers between successive sections of the inner and outer sleeves have longitudinal holes receiving strands or bars of the cable or the rod to be anchored. The inner and outer sleeves are weakened by longitudinal slits or cuts. Cement injected under pressure through an injection tube inserted inside the casing causes slits in the inner sleeves to open so that the cement fills the annular space containing the tie-rod or cable bars or strands and then causes bursting of the outer sleeves to fill any space surrounding the casing. Seals between the injection tube and the spacers limit the injection to one section at a time. After injection with cement, the middle of the casing is flushed out to permit subsequent reinjection.



3,735,542

FISHHOOK SHARPENER

Steve J. Kocian, Berwyn, Ill., assignor to Paul M. Komarec, Westchester Village, Ill., a part interest

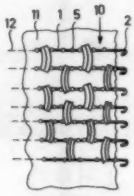
Filed July 16, 1971, Ser. No. 163,327
Int. Cl. B24d *15/02*
U.S. Cl. 51—181 R 5 Claims

A fish hook sharpener which includes a tube and a rod for holding a fish hook. A cap is removably mounted on the tube to hold the rod within the tube. The cap carries a formed abrasive means for sharpening the point of the fish hook. The rod is magnetized for retaining the fish hook after the rod is withdrawn from the tube.

3,735,543
STRUCTURE FOR MAINTAINING A SPACE BETWEEN OVERLAPPING ROOF SHINGLES

Hans Simon, Bruchhausener Strasse, 5463 Unkel (Rhine), Germany

Continuation-in-part of Ser. No. 29,496, April 17, 1970. This application Mar. 24, 1972, Ser. No. 237,805
Claims priority, application Germany, Sept. 30, 1969, P 19 49 217.2
Int. Cl. E04d 1/06, 3/40
U.S. Cl. 52—553 11 Claims

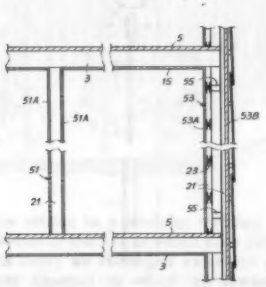


A structure for maintaining between overlapping roof shingles a space through which air can circulate. An inclined roof has a shingle provided with an upper edge and inclined downwardly from its upper edge at the inclination of the roof. An elongated bar extends longitudinally at the inclination of the roof over the shingle and has at an upper end a hook which is adapted to extend around the upper edge of the shingle so that the bar will remain over the shingle hooked to the upper edge thereof. A plurality of spacers are distributed along this bar and are pivotally connected thereto. The spacers extend laterally from the bar and are adapted to maintain a spaced relation between the shingle and another shingle situated thereover in partly overlapping relationship therewith, so that air may circulate between the shingles.

3,735,544
PREFABRICATED BUILDING STRUCTURE INCLUDING METAL FRAMEWORK AND PREFABRICATED MOLDED PANELS OF CEMENTITIOUS MATERIAL

Enrico Longinotti, Viale D. Giannotti 81, Firenze, Italy

Filed Dec. 20, 1971, Ser. No. 209,627
Claims priority, application Italy, Dec. 23, 1970, 9798 A/70; June 12, 1971, 9550 A/71
Int. Cl. E04b 1/38, 2/88
U.S. Cl. 52—235 22 Claims



The open metal framework includes upright components, such as columns, pillars and posts having substantially flat side surfaces, and includes modular length transverse components, such as relatively heavy main beams and relatively lighter connecting beams having flat side and end surfaces. Connecting means, such as bolts and the like secure the flat end surfaces of the transverse components to the flat side surfaces of the upright components and to flat side surfaces of other transverse components to form skeleton wall and floor sections having openings defined by substantially flat surfaces of the components. At least two sets of prefabricated molded modular length panels, of cementitious material, are mounted on the sections and close at least some of the openings therein. At least the transverse components have longitudinal lips, and mechanical means are engaged with these lips and secure the panels to at least the transverse components. The panels have a composition similar to conventional masonry and exterior panels may be formed in the same manner as ceramic tiles. The lower edges of the panels rest on projecting plates on lower transverse components of the framework.

3,735,545
METHODS FOR GROUTING TILE

Frank E. Bernett, Yardley, Pa., assignor to Tile Council of America, Inc., New York, N.Y.

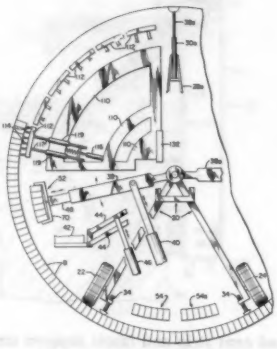
Filed Mar. 31, 1971, Ser. No. 130,006
Int. Cl. E04f 13/00
U.S. Cl. 52—744 6 Claims

An improved method for grouting tile which comprises applying a property-improving material subsequent to trowelling of the grouting composition so as to advantageously modify the working properties and/or final performance properties of the grout initially used and supplied in the container.

3,735,546
APPARATUS FOR LINING KILNS

Vance W. Newman, 15442 Turner Road, Victorville, Calif.

Filed Apr. 22, 1971, Ser. No. 136,409
Int. Cl. E04g 21/14, 23/02
U.S. Cl. 52—749 10 Claims

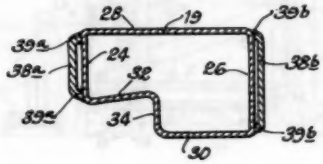


Apparatus for installing adjacent rings of bricks against a cylindrical wall, such as a kiln shell, characterized by a wheel mounted frame, a main conveyor at the bottom of same for moving bricks longitudinally, a transverse group forming conveyor disposed at each side of the main conveyor, a swingable arm for each group forming conveyor having clamping apparatus for grasping a group, and a swingable operator platform for each clamping apparatus from which the movement of a group is controlled to its desired position in the ring. Certain parts of the apparatus which are disposed in the upper two quadrants, when in use, are foldable into the lower two quadrants to facilitate installation of the apparatus through an end aperture of a kiln having a cross section less than the kiln cross section and which also renders the apparatus more compact for transportation over roads to its various loci of use. In use, the kiln remains stationary and the bricks are retained by gravity in the lower two quadrants. After they reach the horizontal diameter they are retained in place in the upper two quadrants by suitable supports and until they are finally keyed together at the tops of the upper quadrants.

3,735,547
HOLLOW BEAM

Harris P. Moyer, Deerfield, and Herbert H. Klein, Arlington Heights, both of Ill., assignors to Unarco Industries, Inc., Chicago, Ill.

Filed Sept. 21, 1970, Ser. No. 74,046
Int. Cl. E04c *3/32*
U.S. Cl. 52—731 **2 Claims**

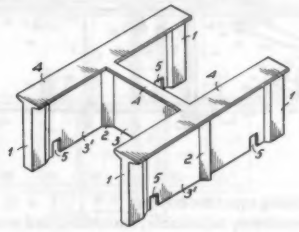


A hollow steel beam is formed of sheet metal by automated forming machines including a continuous welding operation. To provide sufficient material along the upper and lower surfaces of the beam, to develop the full potential strength of the beam in bending, reinforcing strips are welded to the upper and lower stringer sections of the beam in an automated machine operation.

3,735,548
PREFABRICATED SELF-SUPPORTING REINFORCED CONCRETE SHELVING ELEMENT FOR FORMING STORAGE SPACES

Arch Renzo Ferrari, Via Donizetti 39, Milano, and Luciano Ciccotelli, Via South Gottardo 76, Monza, both of Italy

Filed Sept. 10, 1970, Ser. No. 71,058
Int. Cl. B65d *19/18*
U.S. Cl. 52—36 **3 Claims**



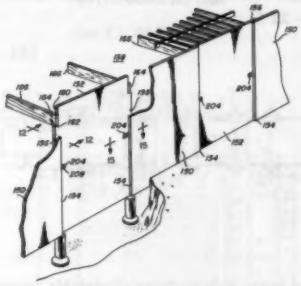
A prefabricated self-supporting reinforced concrete element, suitable for the construction of shelvings and the like for storage purposes has a pair of parallel flanges interconnected by a crossweb so that, in plan, the element has an H-shape. The upper edges of the flanges and web are formed with relatively wide ribs extending at right angles thereto from both sides thereof. The elements may be stacked to form a plurality of columns, and the columns may be juxtaposed with each other to form a plurality of storage spaces. Means are provided for securing adjacent elements to each other.

3,735,549
BUILDING CONSTRUCTION

Barry L. Shuart, 3739 West Ocotillo Road, Phoenix, Ariz.

Continuation-in-part of Ser. No. 848,828, Aug. 11, 1969. This application Dec. 28, 1970, Ser. No. 101,864
Int. Cl. E04b *2/00, 1/40, 1/54*
U.S. Cl. 52—262 **3 Claims**

A building construction comprising a novel panel and column structure for supporting roof carrying beams, wherein substantially vertical wall panels are overlapped at their adjacent edges in order to provide a double thickness of the wall and are secured together at the overlapped portions to afford and constitute column structure which may support beams, such as those carrying a building roof or said overlapped portions may brace a panel wall structure to resist stresses imposed by wind or other loading; the overlapped portions of the

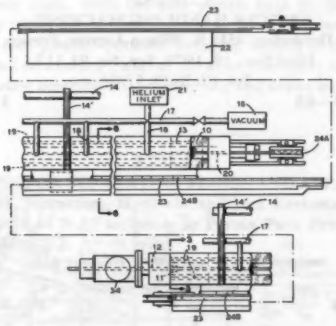


panels forming such column structure greatly economizes in a construction of buildings due to the fact that the cost of casting columns is alleviated. Additionally, notches in the panels provide horizontal beam supporting ledges at vertical edges of some of the panels, and expansion joints allow relative movement of the panels.

3,735,550
LOADING OF FUEL RODS

Claude A. Moore, Appomattox, and William F. Heer, Lynchburg, both of Va., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,392
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 R **13 Claims**

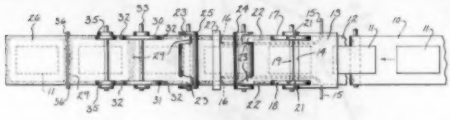


A method of loading fuel rods of the nuclear variety with radioactive pellets wherein the rod is evacuated, subsequently filled with an inert gaseous atmosphere, loaded with such pellets in linear array, and sealed. The pellets in this method are brought in linear array from a supply station to a predetermined situs and then are transferred in such array into a linear bed which is subsequently sealed, evacuated of atmosphere and then filled with helium. The pellets are then transferred in such linear array from the bed to a communicating fuel rod and the latter is sealed in form for use in the core of a nuclear reactor.

3,735,551
APPARATUS FOR AND METHOD OF PACKAGING WITH GAS FLUSHING

Robert H. Pratt, Milwaukee, Wis., assignor to Pratt Manufacturing Corp., Milwaukee, Wis.

Continuation-in-part of Ser. No. 69,301, Sept. 8, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,055
Int. Cl. B65b *31/00*
U.S. Cl. 53—22 A 21 Claims

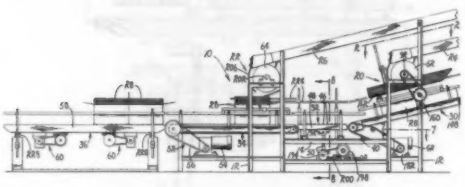


Upper and lower web portions of sealable material are continuously fed and guided, while products which are to be packaged are delivered in longitudinally spaced relationship therebetween. There is skip-sealing means for sealing the web together on at least one side edge while leaving unsealed side gas outlets at regular intervals. Gas injecting means which extends between the webs has a discharge end located a substantial distance downstream of the skip-sealing means, and there is a cross sealer immediately downstream of the outlet end of the gas injecting means. A first set of soft pressure rolls downstream of the cross sealer presses the webs against the product and exhausts gas and air from the side gas outlets, there being a second set of soft pressure rolls between the cross sealer and skip-seal wheel forming a dam against further upstream travel of the gas, to confine the gas travel to a distance equal to less than the length of one package. Downstream of the first set of pressure rolls there is means for sealing the gas outlets, and there is a cut-off knife for transversely severing the packages at the cross seals.

3,735,552
ARTICLE HANDLING MACHINE

Edward J. Derderian, 4514 N. Wilson Avenue, Fresno, Calif.

Filed Nov. 19, 1970, Ser. No. 91,112
Int. Cl. B65b *57/06*
U.S. Cl. 53—63 15 Claims

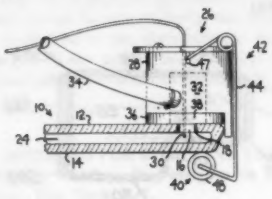


An article handling machine particularly suited for use in packing articles such as melons and the like in layers within a series of containers, characterized by multiple packing stations, each station being adapted to deliver to a common container a layer of articles. A particular feature of the invention resides in the use of a drum operatively supported at each packing station and having included in its peripheral surface an array of pockets for receiving and then discharging articles being packed in patterns dictated by the pattern of the array of the pockets.

3,735,553
MULTIPLE GLAZED UNITS

Lloyd Houser, Lincoln, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 12, 1970, Ser. No. 79,766
Int. Cl. B65b *31/02*
U.S. Cl. 53—86 3 Claims

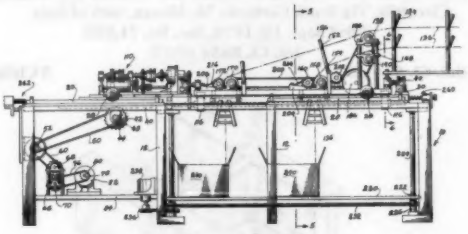


This disclosure relates to multiple glazed units containing fluorocarbon gas and to the method and apparatus for producing such units.

3,735,554
FESTOONING MACHINE

Joseph P. Maggio, Farmingdale, N.Y., assignor to Elastic Systems Corporation, Farmingdale, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,485
Int. Cl. B65b *63/04*
U.S. Cl. 53—116 9 Claims



A festooning machine having:

a. independently adjustable, variable-speed material feeding means;

b. independently adjustable, variable-speed, variable-distance reciprocating drive means which causes the material feeding means to reciprocate longitudinally; and

c. independently adjustable, variable-speed, variable-distance reciprocating drive means which causes the material feeding means to reciprocate transversely concurrently with its longitudinal movement.

ERRATUM

For Class 53—177 see:
Patent No. 3,735,564

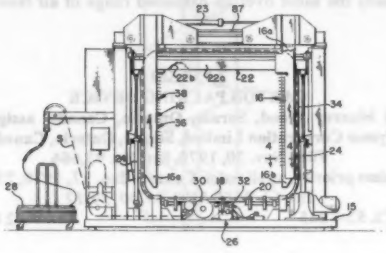
3,735,555
APPARATUS FOR STRAPPING LOADS

James A. Pasic, Aberdeen, Wash., assignor to Ovalstrapping, Inc., Hoquiam, Wash.

Filed Dec. 7, 1970, Ser. No. 95,502
Int. Cl. B65b *13/06, 27/12*
U.S. Cl. 53—124 D 23 Claims

A plurality of objects are stacked and compressed both horizontally and vertically. Corner clips from a clip dispensing

mechanism are placed on opposite upper corners of the compressed stack and a strap is drawn tightly around the stack over the corner clips. The strap is applied on the corner clips



in laterally spaced wraps. The clips may be placed on the upper corners of the stack even when the top object in the stack is offset inwardly or downwardly from the generally rectangular periphery line of the stack.

3,735,556

APPARATUS FOR INSERTION OF SWEET PARTS, IN PARTICULAR OF PRALINES, IN WRAPPING CASES

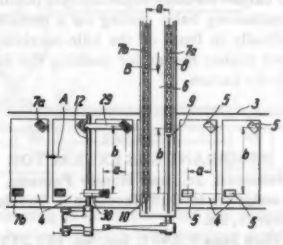
Alfred Dille, Garbsen/Hann, and Udo Thamm, Hannover, both of Germany, assignors to Firma Otto Hansel GmbH, Hannover, Germany

Filed Nov. 3, 1970, Ser. No. 86,567

Claims priority, application Germany, Nov. 8, 1970, P 19 56 246.0

Int. Cl. B65b *5/08, 35/56*

U.S. Cl. 53—240 **11 Claims**



An apparatus for insertion of sweet parts, in particular of pralines in packing cases having a plurality of recesses corresponding to the shape of the parts, comprising feeding paths aligning the parts in one row and equipped with adjustable end abutments, and a transportation device for the open packing cases disposed crosswise at the end of the feeding path, and a transfer device provided at the end of the feeding paths, and comprising means for gripping the individual parts and inserting same into the packing cases and formed as lifting rams sitting on the swinging arms. For insertion of pralines, the feeding paths for the pralines are variable as to their relative distance and the end abutments of the individual paths are adjustable independently from each other to the praline distance. The lifting stamps are adjustable to the praline distances and are connected with a rotary drive transforming the pralines from the delivering position into the packing position.

ERRATUM

For Class 53—245 see:
Patent No. 3,735,561

3,735,557

MACHINE FOR WRAPPING PALLETIZED LOADS IN HEAT SHRINKABLE PLASTIC FILM

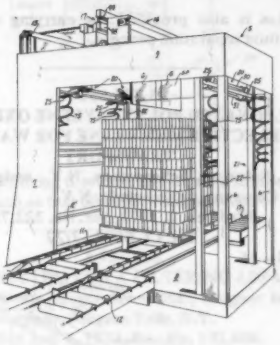
Odell H. Hoffarth, Brooklyn Center, and Thomas L. Schuette, Osseo, both of Minn., assignors to Possis Machine Corporation, Minneapolis, Minn.

Filed Aug. 16, 1971, Ser. No. 172,163

Claims priority, application Great Britain, Aug. 24, 1970, 40,587/70

Int. Cl. B65b *43/30*

U.S. Cl. 53—183 **17 Claims**



A machine for forming bags of gussetted flat heat sealable web stock, opening the formed bags and drawing them down over palletized loads preparatory to conveying the same into an oven where the bags shrink into intimate contact with the load. The bags are opened by suction cup and claw assemblies mounted on the ends of arms that project from hinged carrier frames between which the palletized load is placed to be enwrapped. The frames swing towards and from one another, and in their innermost positions bring the suction cups into contact with the side panels of the pendently hanging web. This causes the suction cups to attach themselves to the side panels, and that attachment brings about initial retraction of the suction cups. With the side panels held by the suction cups, the claws are actuated to cause them to penetrate and grab the side panels. Outward swinging motion of the carrier frames and downward travel of the arms that carry the suction cup and claw assemblies opens the bag and draws it down over the load.

3,735,558

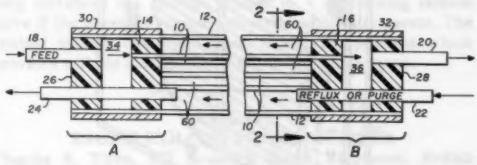
PROCESS FOR SEPARATING FLUIDS AND APPARATUS

Charles W. Skarstrom, Montvale, and Jack Kertzman, Oceanport, both of N.J., assignors to Perma Pure Process, Inc., Oceanport, N.J.

Filed June 29, 1971, Ser. No. 157,860

Int. Cl. B01d *53/22*

U.S. Cl. 55—16 **21 Claims**



A continuous process is provided for separating key components from mixed fluids, for example, separating water vapor from air, wherein a mixed fluid feed including a key component, at a preselected initial relatively high pressure is passed through a single or a series of hollow tube(s), the walls

of which are selectively permeable to the key components of the mixed feed. At the produce end of the tubes, a portion of the product and/or an external purge fluid is expanded or flashed to a lower pressure than the mixed feed and caused to flow as reflux counter-current along the outside of the tubes toward the feed end. In this manner, a pressure gradient is created across the walls of the permeable tubes to induce permeation. The counter-current reflux flow induces a longitudinal concentration gradient along the walls of the permeable tubes which enhances permeation of key components through the walls of the tubes thereby separating them from the mixed fluid feed.

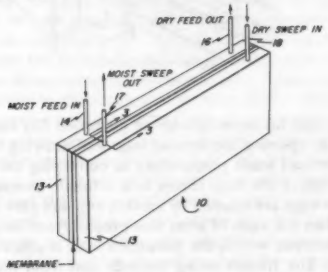
Apparatus is also provided for carrying out the above-described fluid separation process.

3,735,559

SULFONATED POLYXYLYLENE OXIDE AS A PERMSELECTIVE MEMBRANE FOR WATER VAPOR TRANSPORT

Robert M. Salemme, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 2, 1972, Ser. No. 222,754
Int. Cl. B01d *53/22*
U.S. Cl. 55—16 **8 Claims**



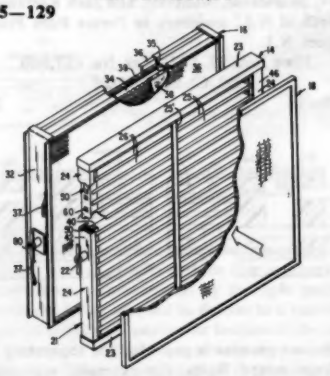
Sulfonated polyxylylene oxide membranes are very effective for the separation of water vapor from other gases. Such a gas separation is very selective and may be readily accomplished at atmospheric pressure. Membrane devices for humidifying or drying an air stream are described.

3,735,560

ELECTROSTATIC AIR CLEANING APPARATUS

Donald C. Wellman, Marcellus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Aug. 5, 1968, Ser. No. 750,189
Int. Cl. B03c *3/36*
U.S. Cl. 55—129 **3 Claims**



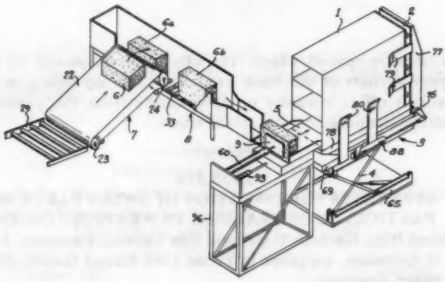
An electrostatic air cleaner including an ionizer and a charged particle collector utilizing a mat or pad of fibrous media disposed in an electrostatic field wherein the ionizer is constructed of alternately spaced wires and structural members of a width so as to block air flow, the construction permitting the physical size of the collector and ionizer to be substantially the same over an extended range of air flow variation.

3,735,561

CARTON PACKING DEVICE

Lloyd Murray Wood, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

Filed Nov. 30, 1970, Ser. No. 93,666
Claims priority, application Canada, Jan. 27, 1970, 73209
Int. Cl. B65b *5/10, 35/40, 39/12*
U.S. Cl. 53—245 **2 Claims**



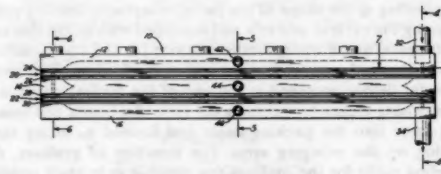
A device for inserting rectangular prismatic bales of soft yieldable material, e.g. rubber, into a carton. The device comprises a tiltable carton support means for holding a carton in filling position with a bale-receiving opening on its side and tilting a filled carton through 90° to upright position, conveyor means for positioning bales resting on a narrow rectangular face longitudinally in front of the bale-receiving opening of the carton and pusher means for pushing the bales from the conveyor into the carton.

3,735,562

MEMBRANE GAS EXTRACTOR

Richard J. Mousseau, Jr., and Homer Patnode, both of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 9, 1971, Ser. No. 151,212
Int. Cl. B01d *59/12*
U.S. Cl. 55—158 **8 Claims**



An improved gas/liquid separator cell utilizing membranes formed of coherent films of unsintered polytetrafluorethylene.

3,735,563

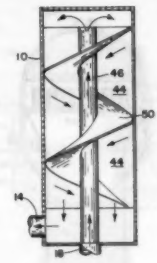
REGENERATING DESICCATOR

Carlton D. Adams, 5 Carroll Avenue, Boylston, Mass.

Filed Nov. 4, 1971, Ser. No. 195,670
Int. Cl. B01d *53/04*
U.S. Cl. 55—179 **7 Claims**

Desiccator for plastic molding material comprising a pair of alternatingly operative drying towers, drying air in one tower

and regenerating the desiccant in the other, in an auto-matic timed sequence, the towers each having means forcing the



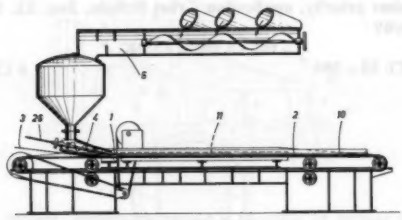
moist air through the desiccant in a tortuous, e.g., helical path, and the dried air to a plenum chamber hopper for the molding material.

3,735,564

APPARATUS FOR MAKING A FILLED FLEXIBLE TUBING IN A CONTINUOUS OPERATION

Othmar Ruthner, Vienna; Peter Puxkandl, and Guido Fastnacht, both of Linz, all of Austria, assignors to Vereinigte Osterreichische Eisen- Und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Aug. 2, 1971, Ser. No. 168,149
Claims priority, application Austria, June 1, 1971, 4693/71
Int. Cl. B65b *9/06*
U.S. Cl. 53—177 **22 Claims**



A tubular shaping device is provided and serves to receive a sheeting web having opposite edge portions and to shape said web to form a flexible tubing and to cause said edge portions to contact each other as said web is moved through said shaping device. A conveyor belt extends through said shaping device and is adapted to contact said web on that side which forms the outside of said flexible tubing in said shaping device and to move said web through said shaping device. A filling device has a discharge opening adjacent to said shaping device at a point at which said flexible tubing has been formed and which is disposed inside said flexible tubing. Joining means are provided to join said contacting edge portions at least in parts of their length.

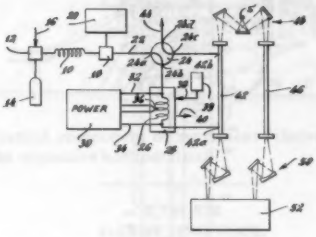
3,735,565

ENRICHMENT OF CHROMATOGRAPH OUTPUT

Anthony C. Gilby, Darien, and John P. Gaglione, Stratford, both of Conn., assignors to Wilks Scientific Corporation, Norwalk, Conn.

Filed May 6, 1971, Ser. No. 140,758
Int. Cl. B01d *15/08*
U.S. Cl. 55—197 **8 Claims**

There is disclosed method and apparatus for enriching the concentration of one component eluting from a gas chromatograph by the substantial elimination of carrier gas therefrom. This is accomplished by passing the desired component through a cooled zone where it is condensed while the carrier gas continues to flow. When the component has been collected, the formerly cooled zone is heated to revaporize the



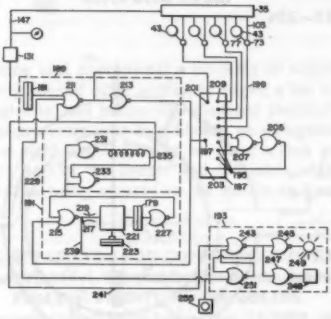
component, permitting it to be flushed into a subsequent sample chamber, such as that of a spectrophotometer.

3,735,566

CONTROL SYSTEM FOR A FILTERING APPARATUS

Jitendra R. Laliwala, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,404
Int. Cl. B01d *46/04*
U.S. Cl. 55—273 **8 Claims**



A fluidic control system for a filtering device employing a plurality of filters and means for causing a reverse flow through the filters to remove the impurities attached thereto. The control system acts to cause a plurality of rapid release valves to sequentially discharge a reservoir containing fluid under pressure into the filters as a predetermined pressure is attained in the reservoir. A time override control automatically advances the control system to a succeeding release valve if the previous release valve should fail to operate. The control system comprises pure fluidic components which operates without electrical or mechanical connections.

3,735,567

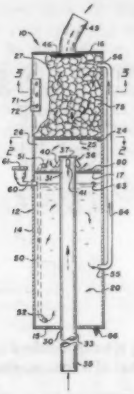
ENGINE EXHAUST FILTER-MUFFLER

Charles S. Viers, 352 Sexsmith Road, Richmond, British Columbia, Canada

Filed July 12, 1971, Ser. No. 161,855
Int. Cl. B01d *50/00*
U.S. Cl. 55—233 **2 Claims**

A muffler having a filter housed in a compartment adjacent a tank containing gas cleaning water. Exhaust gas pressure is utilized to vapourize and circulate a gas-water mixture

through the tank and over the filtering material in such a way as to improve the gas washing and filtering action and to



prevent the unit from becoming clogged with the extracted contaminants.

3,735,568

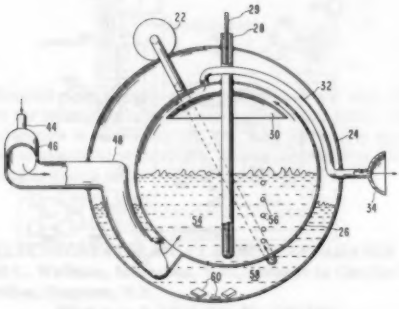
AUTOMATIC LIQUID BUBBLER

Clark H. Beck, Los Altos, Calif., assignor to Nortec Electronics Corporation, Santa Clara, Calif.

Filed Apr. 29, 1971, Ser. No. 138,703

Int. Cl. B01d *45/08*

U.S. Cl. 55—256 **11 Claims**



An automatic liquid bubbler for providing measured quantities of a gas with a known moisture content. A gas in metered quantities is applied to the bottom of a sphere partially filled with a liquid. A further sphere encloses the first sphere and is partially filled with a liquid that is heated to boil continuously to maintain the inner sphere liquid at a constant temperature: the boiling point of the liquid in the outer sphere. The liquid levels of both spheres are continually replenished to maintain substantially constant levels. Gas bubbled up through the inner sphere liquid is collected and passed out of the spheres to provide a gas having a known moisture quantity.

3,735,569

WATER-STEAM SEPARATOR

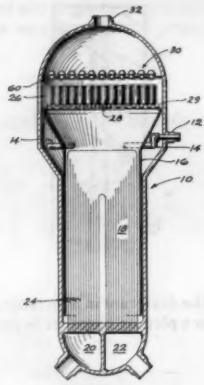
Rudolph J. Micheller, East Granby, Conn., and Robert C. Patterson, Longmeadow, Mass., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Sept. 7, 1971, Ser. No. 178,105

Int. Cl. B01d *45/12*

U.S. Cl. 55—348 **3 Claims**

A water-steam separator made up of a number of "cell" structures, each cell having a vertical cylindrical member with a spinner arranged in its lower portion, and holes through the walls thereof above the spinner. A housing surrounds, and extends above, the cylindrical member. A plate with a central opening therein is positioned within the housing above the cylindrical member.



3,735,570

CHROMATOGRAPHIC COLUMN

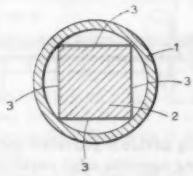
Stephen Archbold Bergen, and Hanniel Elidad Dubsky, both of Cambridge, England, assignors to Pye Limited, Cambridge, England

Filed Jan. 23, 1970, Ser. No. 5,261

Claims priority, application Great Britain, Jan. 23, 1969, 3,936/69

Int. Cl. B01d *15/08*

U.S. Cl. 55—386 **6 Claims**



A chromatographic column is manufactured in the form of a tube having a core of uniform cross-section which contacts the tube wall at two or more points forming separate longitudinal passages in the column. The cross-section of the core can be polygonal or star-shaped and the core can be drawn into the tube by means of a draw-wire. The core surface constitutes, or is coated with, a partitioning agent and the surface can be roughened. The core and tube can be made of stainless steel or thermoplastics.

3,735,571

RESPIRATORS

Klaus Helmut Georg Pampuch, Wiltinger Str. 1-4, 1 Berlin 28, and Werner Herbert Mascher, Bismarckstrasse 6, 1 Berlin 41, both of Germany

Filed May 25, 1971, Ser. No. 146,650

Claims priority, application Germany, June 9, 1970, P 20 29 414.8

Int. Cl. B01d *31/00*

U.S. Cl. 55—372 **1 Claim**

This invention relates to respirators, of the kind in which a positioning member is located between a filter element and a casing or receptacle. The positioning member is of cruciform

shape and its ends form double arms so that the two arms at each said end can embrace a corner of the filter. Preferably,

the two arms of each end are connected together by their ends and may form a quadrilateral figure, such as a square.

3,735,572

TRACTOR-CARRIED MOWER AND HINGE ARRANGEMENT THEREFORE

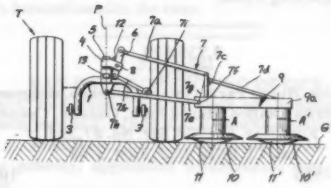
Ludwig Kasberger, 7702 Gottmadingen, Germany, assignor to Maschinenfabrik Fahr AG, Gottmadingen, Germany

Filed Jan. 20, 1972, Ser. No. 219,276

Claims priority, application Germany, Jan. 22, 1971, P 21 02 911.8

Int. Cl. A01d *35/26*

U.S. Cl. 56—16.2 **10 Claims**



A mower, preferably having a plurality of mower drums rotatable about respective vertical axes and spaced transversely apart upon a support beam, is connected to the elevatable three-point hitch structure of a tractor by a linkage allowing vertical displacement of the mower in one angular position of the beam with respect to the hinge assembly so that the mower drums may follow the contours of the ground. The junction between the frame and the hinge assembly is provided with abutment or stop selectively positionable to retain the attachment device, in an elevated position without supporting the frame on the ground to facilitate reattachment of the mower to the tractor.

3,735,573

AGRICULTURAL MACHINE

Peter Dziuba, Im Oschle, and Josef Gebele, Saulgau, both of Germany, assignors to Josef Bautz GmbH, Saulgau/Wurtt., Germany

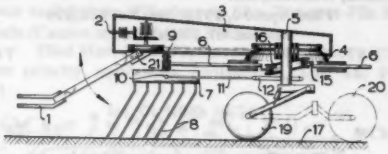
Filed May 12, 1971, Ser. No. 142,561

Claims priority, application Germany, May 13, 1970, P 20 23 248.8

Int. Cl. A01d *79/00*

U.S. Cl. 56—370 **8 Claims**

A hub is carried by a support turnable about an upright axis and in turn provides a plurality of arms which radiate from it and carry at their respective outer end portions sets of parallel tines which project downwardly toward the ground. The tines are so mounted that each set turns about a vertical and a horizontal axis and when the arms turn with their hub, each set extends during one portion of the circular path in which it moves, substantially tangential to this path and in this portion



has a vertical component of movement relative to the path about the respective horizontal axis.

3,735,574

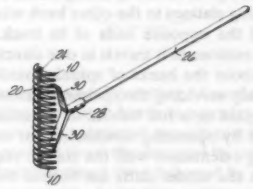
GARDENING TOOL

William C. R. Heckner, Carrizozo, N. Mex., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Aug. 18, 1972, Ser. No. 281,828

Int. Cl. A01d *7/00*

U.S. Cl. 56—400.16 **1 Claim**



A gardening tool comprising: a plurality of sickle shaped blades having aligned outer and inner edges; a bar extending at right angles to said blades and disposed therebetween to form a rigid structure with said blades; an elongated handle extending at right angles to said bar; and a fork extending between one end of the handle and the inner edges of the blades, the fork being secured to the handle end and to the first means.

3,735,575

SPINNING APPARATUS FOR CONTINUOUS OPERATION

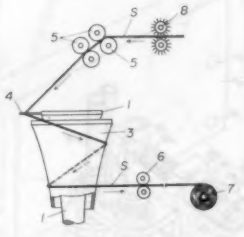
Soichiro Hattori, 444-4, Shimoshibutani, Ikeda, Japan

Filed Dec. 17, 1971, Ser. No. 209,156

Claims priority, application Japan, Dec. 23, 1970, 45/117151; Dec. 30, 1970, 45/129657

Int. Cl. D01h *5/28*

U.S. Cl. 57—51.3 **5 Claims**



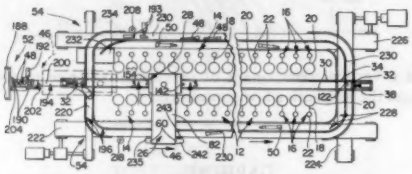
A spinning apparatus for continuous operation comprises a spindle and a tubular rotary body disposed around the spindle concentrically therewith and driven at a lower speed than the spindle. An untwisted roving supplied from draft rollers is twisted by the rotation of the spindle, then wound on the outer periphery of the rotary body one or several turns and thereafter passed toward discharge rollers continuously.

3,735,576

SPINNING SYSTEM

John Nelson, North Kingstown, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Apr. 30, 1971, Ser. No. 138,899
Int. Cl. D01h 9/10
U.S. Cl. 57—53 7 Claims



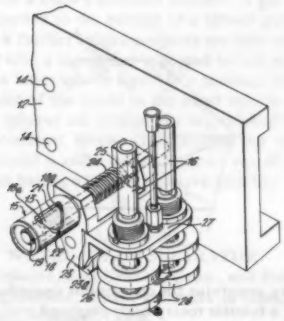
An automatic spinning system has at least one spinning frame with opposite banks of spinning stations. A tractor carries a tender capable of randomly servicing the spinning stations. The tractor is mounted for back and forth movement between opposite ends of a track above the banks of spinning stations. The tender is mounted on the tractor for swinging movement about the ends of the spinning frame from one of the banks of spinning stations to the other bank when the tractor is at either of the opposite ends of its track. Thus, the tender patrols the stations as it travels in one direction along a continuous path about the banks of spinning stations, and is capable of randomly servicing the spinning stations. Either a broken strand of yarn or a full bobbin at a station requiring servicing is sensed by operating mechanism for stopping the tender in servicing orientation with the station requiring servicing, whereupon the tender doffs the bobbin from the station spindle and donns an empty bobbin and starts the strand winding onto the empty bobbin. Empty bobbins are conveyed to the tender and filled bobbins are conveyed from the tender as they are doffed. If desired, the tender may be equipped with a system for ridding the spinning frame of lint.

3,735,577

TEXTILE APPARATUS WITH BRAKING ARRANGEMENT

Denys William Brough, and Douglas Gibbons, both of Macclesfield, England, assignors to Ernest Scragg & Sons Limited, Macclesfield, England

Filed Apr. 21, 1971, Ser. No. 135,949
Claims priority, application Great Britain, Apr. 22, 1970, 19,237/70
Int. Cl. D01h 7/22
U.S. Cl. 57—89 3 Claims



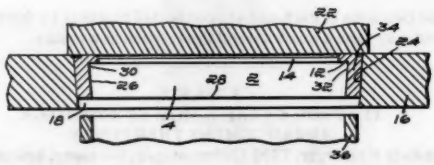
In a yarn processing machine having multiple yarn twisting apparatuses, each apparatus is carried on a bearing plate releasably and adjustably secured to a slide block. Each slide block is mounted on slides projecting laterally from a beam of the machine frame, and a cam mechanism on the slide provides for moving the block to bring a wharve of the yarn twisting apparatus into or out of contact with a driving belt.

3,735,578

SPINNING RING

Andrew J. Wayson, Needham, and John T. O'Connell, Medfield, both of Mass., assignors to Merriman, Inc., Hingham, Mass.

Division of Ser. No. 88,262, Nov. 10, 1970, Pat. No. 3,676,917.
This application May 8, 1972, Ser. No. 250,880
Int. Cl. D01h 7/52
U.S. Cl. 57—119 4 Claims



A powdered metal spinning ring in which the ring, after being initially formed in a press and sintered is then compressed circumferentially to taper the ring body so that the inner wall is in the form of an inverted truncated cone. The exterior of the ring is then machined in conventional manner after which the ring is heat treated and polished to be ready for use in a spinning frame.

3,735,579

TWINE

Peter V. Catlos, Huron Park, Ontario, Canada, assignor to Ferplas Industries Limited, Huron Park, Ontario, Canada

Filed Nov. 5, 1970, Ser. No. 87,295
Int. Cl. D02g 3/02, 3/04, 3/08
U.S. Cl. 57—155 10 Claims

A twine having a maximum knot strength of 10 percent higher than the knot strength of earlier twines comprising a core of extensible, synthetic, plastic filaments with an extensible cover wound about said core is achievable by twisting together a resilient synthetic (particularly, polypropylene and also polyolefin, an acrilic resin, nylon, polymers of halogenated hydrocarbons, polyesters or similar resinous materials having high tensile strength and resiliency in the direction of orientation with breaking tenacity of 3.5–7 gpd.) film oriented in the longitudinal direction and an extensible paper such as Kraft or tissue type having a stretch in the machine direction of 4 percent or more. The paper and film components of the twine disclosed may be reinforced with synthetic filament yarn.

3,735,580

CLOCK

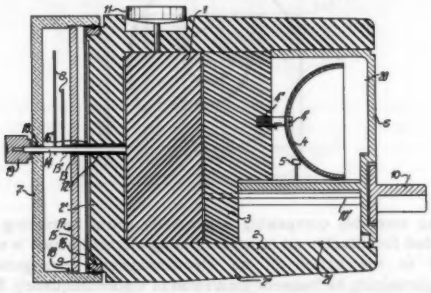
Riccardo Giuseppe Nava; Giorgio Augusto Romani; Duccio Soffientini; Aldo Rodolfo Subert; Alessandro Giuseppe Ubertazzi, and Peter Roman Vetter, all of Milan, Italy, assignors to Cohel-Compagnie d'Horlogerie et Electronique SA, Roveredo, Switzerland

Filed May 31, 1972, Ser. No. 258,414

Claims priority, application Switzerland, July 5, 1971, 9875/71

Int. Cl. G04b *37/00*

U.S. Cl. 58—53 4 Claims



A clock has a clockwork movement enclosed in a soundproof case of expanded plastic material having a substantially non-porous smooth outer surface and a sponge-like inner cellular structure. The dial and hands and, possibly, a sonorous alarm are located outside the case.

3,735,581

DAY-DATE CORRECTING DEVICE

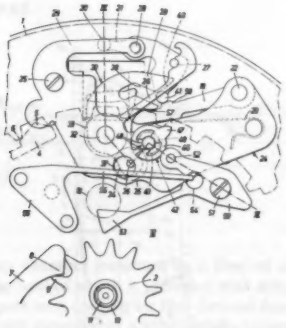
Josef Fluck, and Roland Zaugg, both of Grenchen, Switzerland, assignors to A. Schild S.A., Grenchen, Switzerland

Filed Aug. 17, 1971, Ser. No. 172,464

Claims priority, application Switzerland, Aug. 19, 1970, 12400/70

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 1 Claim



The movement comprises a calendar correcting device independent of the mechanism automatically driving the calendar indicators. This device is controlled by the winding and hand setting stem having a third axial position for the calendar correction and it comprises a pinion driven by the stem when the latter is rotated in correcting position. The pinion carries a correcting member driving the calendar indicators. A frictional coupling provided between the pinion and the correcting member however permits the latter to stay at rest when the mechanism automatically driving the calendar indicators just engages the same.

3,735,582

CALENDAR WATCH DAY-DATE DRIVING AND CORRECTING MEANS

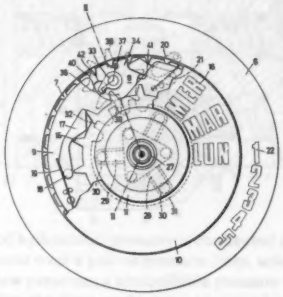
Jean-Claude Schneider, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'Horlogerie Chs. Tissot et Fils S.A., Le Locle (Canton of Neuchatel), Switzerland

Filed Mar. 31, 1972, Ser. No. 240,118

Claims priority, application Switzerland, Apr. 16, 1971, 5566/71

Int. Cl. G04b *19/24*

U.S. Cl. 58—58 9 Claims



Independent date and day setting of a calendar watch is effected by setting the watch hands to a predetermined time followed by to-and-fro rotational movements of a crown in its time setting position to set the date and by setting the watch to a different predetermined time followed by to-and-fro movement of the crown also in its time setting position to set the day.

3,735,583

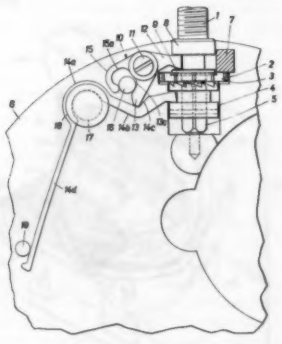
MECHANISM FOR HAND-SETTING AND WINDING

Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Bettlach, Switzerland

Filed Dec. 21, 1971, Ser. No. 210,390

Int. Cl. G04b *27/04*

U.S. Cl. 58—65 3 Claims

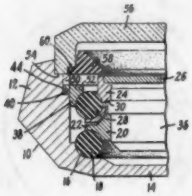


A device for setting the hands and for rewinding a watch. A setting lever is associated with an elastic arm in such a way that it is resiliently held in its two extreme positions. The resilient arm is blank in one piece with a lever spring and comprises an arcuate section engaging around a pin held by the watch frame. A flexible arm acting as a lever spring extends from one side of this arcuate member and the lever extends from the other side of the arm.

3,735,584
SHOCK-RESISTANT WATCHCASE FOR A PORTABLE WATCH

Ikuo Tokunaga, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 22, 1972, Ser. No. 237,037
Claims priority, application Japan, Mar. 26, 1971, 46/17290; Apr. 14, 1971, 46/23156
Int. Cl. G04b 37/00
U.S. Cl. 58—88 C 19 Claims

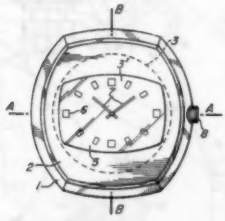


A shock-resistant structure for a portable watch includes a watch casing in which a watch movement is mounted by means of a pair of opposed support elements which engage the watch movement and a pair of shock-absorbing rings made of a resilient material which are disposed between each of the support elements and the watch casing. The various elements are secured in place in the watch casing by a retaining member which is removably attached to the watch casing.

3,735,585
WATER-PROOF WRIST WATCH CASE HAVING NON-CIRCULAR GLASS PROFILE

Tooru Takagi, Kokubunji, Japan, assignor to Orient Watch Co., Ltd., Tokyo, Japan

Filed June 23, 1971, Ser. No. 156,011
Claims priority, application Japan, Nov. 13, 1970, 45/112696
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R 5 Claims



A watch glass having a non-circular glass element laminated on an ordinary round glass element. The watch glass is placed on a main body of the watch case with an O-ring interposed therebetween and a rim member having an inner profile complementary to the profile of said non-circular glass element is force-fitted over the main body of the case to surround said non-circular glass element, whereby the non-circular glass element only of the watch glass is exposed to the surface of the watch case.

3,735,586
HAIRSPRING ASSEMBLY FOR OSCILLATOR

Jean-Claude Berney, Lausanne, Switzerland, assignor to Bernard Golay S.A., Lausanne, Switzerland

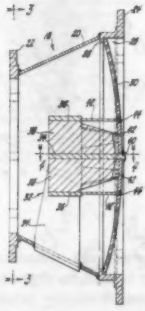
Filed Sept. 25, 1972, Ser. No. 292,170
Claims priority, application Switzerland, Sept. 27, 1971, 13976/71
Int. Cl. G04b 17/06
U.S. Cl. 58—114 6 Claims

An assembly comprising a generally spiral hairspring intended for attachment to an oscillating element which is subject to the action of an electromagnetic arrangement synchronizing its frequency with that of a pilot frequency. The turns of the hairspring are divided into two groups or sections, one external group or section of at least one turn and one internal group or section. The groups or sections are connected to each other by a section of hairspring substantially radially disposed with respect to the axis of the hairspring. Two banking stops are provided and so arranged that the radial section, on moving between the stops, encounters them as soon as the angle of oscillation exceeds the limit fixed by the stops.

3,735,587
ENGINE EXHAUST TURBINE INLET SCREEN

Albert N. Addie, La Grange Park, and Glenn W. Freitag, Woodridge, both of Ill., assignors to General Motors Corporation, Detroit, Mich.

Filed May 6, 1971, Ser. No. 140,801
Int. Cl. F02b 37/04
U.S. Cl. 60—13 R 3 Claims



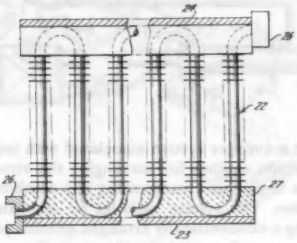
An engine exhaust turbine inlet screen exposed in normal operation to substantial variations in exhaust gas temperatures is supported in the exhaust gas flow path by a bracket connected with the central portion of the screen by a combination of stiff and flexible portions of minimum mass. The arrangement provides free expansion of the screen, minimizing of internal stresses due to heat transfer between the screen and bracket and isolation of residual stresses due to heat transfer to the small central portion of the screen.

3,735,588

HEAT EXCHANGER LEAKAGE BAFFLE AND POSITIONING MEANS

Seymour Moskowitz, Fort Lee, and Joseph A. Horvath, Lodi, both of N.J., assignors to Curtiss-wright Corporation, Wood-Ridge, N.J.

Filed July 21, 1971, Ser. No. 164,776
Int. Cl. F02c 7/10; F28f 11/00
U.S. Cl. 60—39.51 R 6 Claims



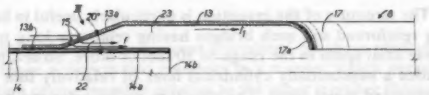
A heat exchanger comprising serpentine finned tubes disposed in an annular configuration, with means for positioning and supporting the unfinned return bends of the tubing with a porous refractory composition in such a manner as to prevent the external heat transfer fluid from bypassing the finned portions and to prevent leakage of hazardous internal fluid from the tubes, while allowing movement of the tubing in thermal expansion.

3,735,589

WALLS OF COMBUSTION CHAMBERS

Jacques E. J. Caruel, Dammarie-les-Lys; Jean-Pierre J. E. Castellant, Chartrettes; Simone Coutor, Melun, and Armand Jean-Baptiste Lacroix, Itteville, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed June 1, 1971, Ser. No. 148,715
Claims priority, application France, June 2, 1970, 7020243
Int. Cl. F02g 1/00
U.S. Cl. 60—39.65 5 Claims



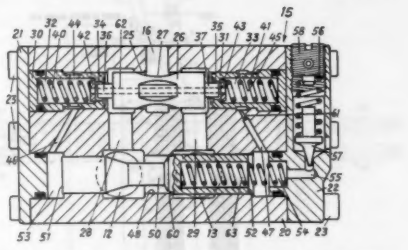
A combustion chamber mounted in a flow of air at high pressure and the wall of which is provided with dilution holes located in the path of a cooling air film derived from the said flow through holes provided at a substantially truncated junction connecting an upstream wall element with a downstream wall element offset relative to the upstream element towards the outside of the chamber, wherein the upstream wall element is extended rearwardly of this junction by means of a tongue substantially parallel to the rear element, and wherein this junction has an inclination between 15° and 25°, preferably about 20°, the holes are arranged in zig-zag very near the upstream element so as to provide in the downstream direction a divergent portion of unperforated wall of substantial length, and the dilution holes are surrounded by flanges projecting into the combustion chamber.

3,735,590

HYDROSTATIC REVERSIBLE DRIVE

Gerhard Bobst, Oensingen, Switzerland, assignor to Von Roll AG, Gerlafingen, Switzerland

Filed June 10, 1971, Ser. No. 151,721
Claims priority, application Switzerland, June 26, 1970, 9735/70
Int. Cl. F15b 15/18
U.S. Cl. 60—468 12 Claims



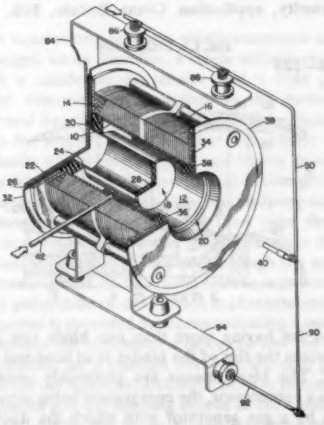
A source of hydrostatic pressure is connected to a reversible hydraulic motor over a pair of pressure lines, selectively carrying high or low pressure; a controllable pressure limiting valve is connected to the lines, and having an output connected to a drain. The controllable pressure limiting valve includes a main piston operating in a piston chamber, a settable pilot valve unit, an interconnecting line connecting fluid under line pressure to the settable pilot valve unit and a drain valve unit having a movable drain control piston connecting the interconnecting line with the side of the main piston to which the higher pressure is applied, the arrangement permitting direct drain connection of either of the pressure lines to the drain with a minimum of parts or external interconnections.

3,735,591

MAGNETO-PLASMA-DYNAMIC ARC THRUSTER

James A. Burkhart, Olmsted Falls, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 30, 1971, Ser. No. 175,852
Int. Cl. F03h 5/00
U.S. Cl. 60—202 10 Claims



Improving the performance of a magneto-plasma-dynamic arc thruster in the 600 to 2,100 seconds specific impulse range by locating its cathode in the exhaust beam downstream of the anode and main propellant injection point.

3,735,592

APPARATUS FOR PROTECTION OF A GAS JET GENERATOR

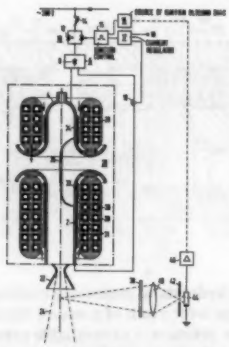
Gerd Schafer, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin/Munich, Germany

Filed Oct. 29, 1970, Ser. No. 85,118

Claims priority, application Germany, Nov. 3, 1969, P 19 55 147.4

Int. Cl. H05b 7/06

U.S. Cl. 60—203 13 Claims



A gas jet generating apparatus has a container with an electric arc chamber from which the gas jet is to issue, two arc electrodes are provided in the chamber, and at least one of the electrodes has a metallic portion defining a foot-point locality for the arc. The combination of a protective device has near at least one of the electrodes, a vaporizable means of material different from that of said electrode portion so as to effect, when burning off, a change in spectral distribution of the gas jet. Also provided is a signal generating arrangement that is responsive to the spectral distribution for deriving a signal from the change.

3,735,593

DUCTED FANS AS USED IN GAS TURBINE ENGINES OF THE TYPE KNOWN AS FAN-JETS

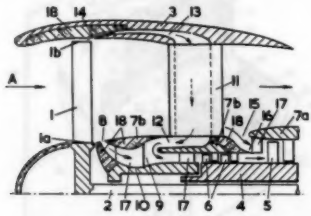
Alun Raymond Howell, Cove, Farnborough, England, assignor to Minister of Aviation Supply in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 11, 1971, Ser. No. 114,469

Claims priority, application Great Britain, Feb. 11, 1970, 6498/70

Int. Cl. F02k 3/04

U.S. Cl. 60—226 14 Claims



A ducted fan having more than one blade row has bleed means adjacent the tips of the blades in at least one upstream blade row. The bleed means are preferably connected by passages to a compressor, the compressor being separate from but driven by a gas generator with which the ducted fan is combined to provide a fan jet engine. Alternative forms of the invention also have bleed means adjacent the roots of the blades in at least one upstream blade row, and there may also be bleed means adjacent the trailing edges of the blades in such rows.

3,735,594

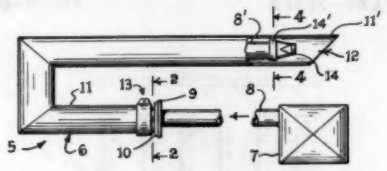
SCAVENGER SYSTEM FOR INDUSTRIAL ENGINES

James D. Johnson, and Laurren C. Edwards, Sr., both of Box 898, Pecos, Tex.

Filed May 17, 1971, Ser. No. 143,806

Int. Cl. F01n 5/04

U.S. Cl. 60—319 7 Claims



An exhaust scavenger system associated with industrial internal combustion engines for scavenging the atmosphere in vicinity of the engine and transporting any combustibles to a remote location. The system includes an elongated tubular housing having a concentrically arranged exhaust pipe affixed therein, with means for regulating the mass flow of gases ingested through the annulus formed between the exhaust pipe and its housing.

A gas deflector means is affixed to the terminal end of the exhaust pipe and located within the housing so as to increase the efficiency of the scavenging action of the apparatus.

3,735,595

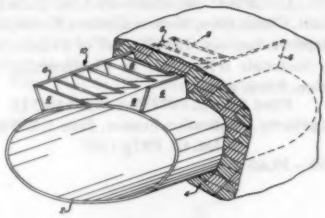
REINFORCED SOIL BRIDGE

Reynold K. Watkins, Logan, Utah, assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Oct. 29, 1971, Ser. No. 193,727

Int. Cl. F16l 9/04

U.S. Cl. 61—16 7 Claims



The structure of the invention is particularly useful in building reinforced soil arch bridges having relatively long transverse axial spans in the range of 30 feet or more. Structure includes a substantially cylindrical liner of relatively thin wall corrugated metal sheet. The structure is characterized by the provision of one or more open-top bins disposed along the upper surface of the liner. Earth-fill is compacted in layers in the bins and around the liner. The bins serve to confine and thus reinforce and strengthen the compacted earth-fill so that a reinforced soil bridge is formed. The bins also serve as stiffeners for the liner.

3,735,596

VALLEY CLOSURE FOR A ROOF CONSTRUCTION

Fred J. Stephenson, Lawrence, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

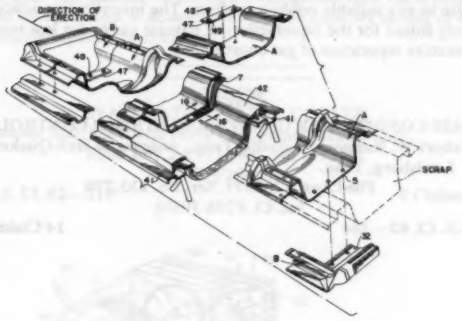
Filed July 26, 1971, Ser. No. 164,803

Int. Cl. E04d 13/06

U.S. Cl. 61—14 14 Claims

A valley closure for a roof construction for covering the valley formed where two adjacent sloped roof buildings drain toward one another, including interconnected valley covering

panel members and opposite valley closing end members, the panel members are elongated and have upstanding protuberances arranged in sets at regularly longitudinally spaced locations along the panel members with such protruberances having such extent transversely of and longitudinally of the panel members as to enhance the structural strength thereof and to



constitute a series of effective expansion joints at such locations to relieve internal stresses in the material of the panels caused by thermal expansion and contraction of the panel material. Each set of protruberances includes portions spaced apart sufficiently to provide an adequate drain passage along the valley closure. The panel and end closure members can be of molded plastic materials.

3,735,597

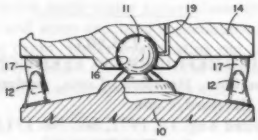
HINGE SYSTEM FOR OFFSHORE STRUCTURE

Arthur L. Guy, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Continuation of Ser. No. 53,049, July 8, 1970. This application Feb. 24, 1972, Ser. No. 229,155

Int. Cl. E02b 17/00; E02d 27/04; F16c 11/06

U.S. Cl. 61—46.5 **9 Claims**



A hinge for use in a buoyant articulated off-shore platform. The hinge connects two members in a manner which permits rotation of one member relative to the other member through vertical planes while preventing horizontal rotation of the members relative to each other. The hinge is made up essentially of two parts: (1) a ball and socket joint and (2) torque elements arranged about the ball and socket joint.

3,735,598

DIVER'S BELT AND METHOD OF MANUFACTURE

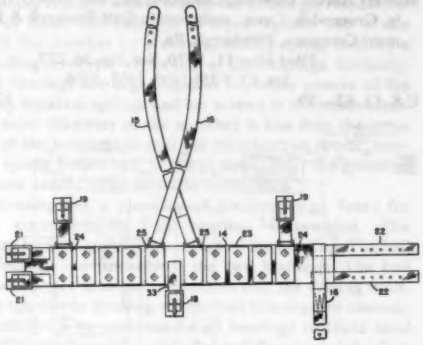
Ernest N. Oeland, Jr., San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 9, 1971, Ser. No. 206,249

Int. Cl. B63c 11/02

U.S. Cl. 61—70 **3 Claims**

A method of manufacturing articles from webbing includes the steps of impregnation of selected areas with urethane under hydrostatic pressure and forming fastening apertures in the impregnated areas. The method is particularly useful in the fabrication of a diving weight belt for use with helmet, or hard hat, diving equipment. The belt made according to the method is a new and useful article having improved salt water



deterioration resistant properties and added strength especially around the fastening apertures.

3,735,599

PROCESS FOR AUTOMATIC CONTROL OF AIR SEPARATION APPARATUS

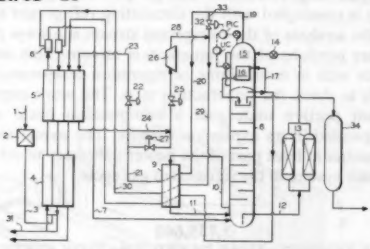
Tetsuo Izumichi, Takarazuka; Sadayuki Nakanishi, and Matsuzi Miyazaki, both of Kobe, all of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Hyogo-ken, Japan

Filed Jan. 8, 1971, Ser. No. 104,986

Claims priority, application Japan, Jan. 9, 1970, 45/2800

Int. Cl. F25j 3/00, 3/02, 3/04

U.S. Cl. 62—21 **3 Claims**

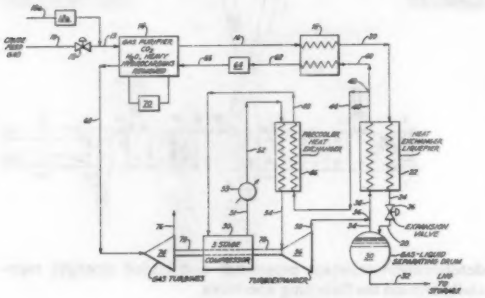


In an air separation apparatus which comprises a reversing heat exchanger, an air liquefier, a single column rectifier provided with a condenser-evaporator and a cold generation device and wherein air is cooled in the reversing heat exchanger and liquefied in the air liquefier, the liquefied air is rectified in the single column rectifier to separate into liquid air abundantly containing oxygen and highly pure nitrogen gas, the liquid air being subjected to heat exchange in the condenser-evaporator, the resulting gasified air being subjected to heat exchange in the air liquefier and sent through the reversing heat exchanger to the cold generation device and the resultant liquefied air being sent through the air liquefier and the reversing heat exchanger to release, a process for controlling the generation of cold which is characterized in that a by-pass channel is provided for communicating a position on a passage between the condenser-evaporator and the air liquefier and a position on a passage between the cold generation device and the air liquefier, a control valve is provided on the by-pass channel and the opening degree of the control valve is automatically controlled so as to regulate appropriately the flow volume of the gaseous air passing through the by-pass channel whereby the level of the liquid air in the condenser-evaporator is kept constant and the rectification of the liquefied air in the single column rectifier is carried out under stable conditions.

3,735,600
APPARATUS AND PROCESS FOR LIQUEFACTION OF NATURAL GASES

Stewart Harold Dowdell, Oakmont, Pa., and Robert W. Pachaly, Greenwich, Conn., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 11, 1970, Ser. No. 36,277
Int. Cl. F25j *1/00, 1/02, 3/06*
U.S. Cl. 62—39 **13 Claims**

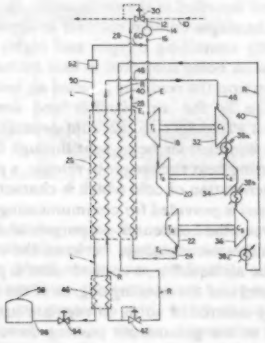


A process and apparatus for liquefaction of natural gas wherein the gas is cooled and liquified under pressure in a heat exchanger-liquifier. The pressurized cold liquid from the heat exchanger-liquifier is isenthalpically expanded to reduce the pressure and further cool the liquid while at the same time flashing a minor gas fraction. Refrigeration for the liquefaction of the natural gas is supplied by a circulating refrigerant stream which is compressed and work-expanded to obtain the necessary cooling. The minor flash gas portion of the liquefaction step is comingled with the circulating refrigerant stream so that the analysis of the refrigerant stream is always rich in the lighter portions of the liquefaction stream. This analysis difference aids in maintaining refrigeration temperature differentials to drive the liquefaction step. The work-expanded refrigerant portion undergoes a compression cycle and is work-expanded in an expansion turbine. The expansion turbine furnishes at least part of the power necessary to drive the compressor system in the refrigerant gas cycle.

3,735,601
LOW TEMPERATURE REFRIGERATION SYSTEM

James H. Stannard, Jr., 583 Tarragon Drive, San Rafael, Calif.

Filed July 16, 1971, Ser. No. 160,024
Int. Cl. F25b *9/00*
U.S. Cl. 62—87 **7 Claims**

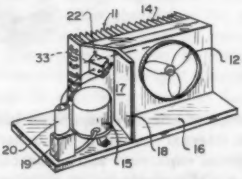


A refrigeration system in which a pressurized gas provides the energy. The gas is expanded through an expansion engine and then passed through a heat exchanger, wherein the refrigeration effect resulting from its expansion is recovered. The expansion engine operates a conventional closed loop refrigeration system which is, in turn, cascaded through the low temperature gas discharging from the expansion engine. Prior to being cooled by the low temperature gas, the refrigeration cycle may also reject heat at a higher temperature to any suitable cooling medium. The invention is particularly suited for the liquefaction of natural gas or for low temperature separation of gas constituents.

3,735,602
AIR CONDITIONER CONDENSING SYSTEM CONTROL

Robert W. Ramsey, Nashville, Tenn., assignor to Heil-Quaker, Lewisburg, Tenn.

Filed Apr. 12, 1971, Ser. No. 133,276
Int. Cl. F25b *39/04*
U.S. Cl. 62—184 **14 Claims**

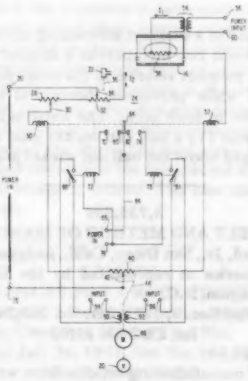


An air conditioner condensing system control having a motor driven means for flowing cooling air in heat transfer association with a condenser thereof. The operation of the motor is controlled by a resistance means in series therewith and disposed in heat transfer association with the air flowed by the air flowing means. The control means further includes means for providing an adjustable additional voltage to the motor for modulating the speed thereof. The additional voltage supply means may comprise an inexpensive gated control element adapted to control only a portion of the total maximum power supply voltage to the motor. Means are provided for sensing the temperature of the condenser at a liquid-gas interface therein for controlling the gated control element.

3,735,603
LIQUID REFRIGERANT FEED CONTROL

Clark B. Hamilton, Hartford, Conn., assignor to Dunham-Bush, Inc., Hartford, Conn.

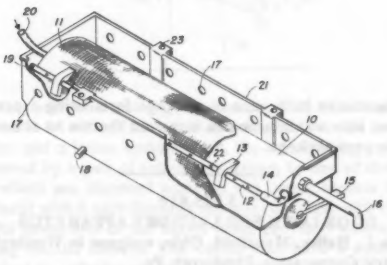
Filed Aug. 12, 1971, Ser. No. 171,081
Int. Cl. F25b *41/00*
U.S. Cl. 62—210 **2 Claims**



The quality of the suction gas at the input of a variable capacity compressor in a refrigeration system is controlled by

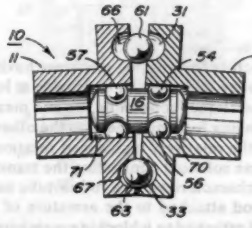
regulating the flow of liquid refrigerant from the condenser to the evaporator in the system. A thermistor at the input of the compressor senses the quality or gas-liquid ratio of the suction gas and controls the position of a liquid refrigerant flow valve to control the flow rate of the liquid refrigerant, thereby controlling the quality of the suction gas at the input to the compressor. The position of the liquid refrigerant flow valve may also be controlled in accordance with the capacity setting of a variable capacity compressor.

3,735,604
EVAPORATIVE WATER COOLER
Jaromir Astl, 626 Circle Drive East, Solana Beach, Calif.
Filed July 2, 1971, Ser. No. 159,354
Int. Cl. F28d *5/00*
U.S. Cl. 62—316 **4 Claims**



A device using the principles of evaporative cooling is used to cool water purified by a water purifier based on reverse osmosis technology. The outside surfaces of the existing water purifier is covered by a sleeve of porous material. This assembly is installed in a container having numerous holes in its walls to provide for air circulation. The waste water produced by the purifier is continuously discharged so as to wet the porous sleeve. Excess waste water accumulates in the bottom of the container and upon reaching a predetermined level is discharged to the drain. Water evaporating out of the sleeve removes heat and therefore cools down the sleeve-purifier assembly and the purified water contained within.

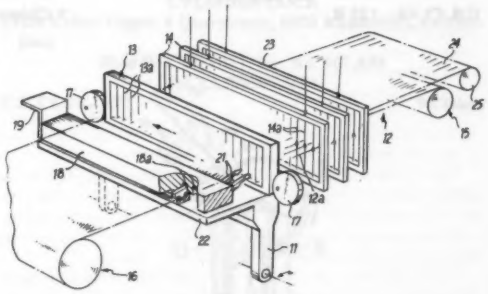
3,735,605
COUPLING
John T. Hoffman, 1604 E. Greenleaf Street, Allentown, Pa.
Filed Nov. 29, 1971, Ser. No. 202,819
Int. Cl. F16d *3/16*
U.S. Cl. 64—6 **7 Claims**



A novel coupling permits a driving shaft to drive a driven shaft though the two shafts are not exactly coaligned. Each of a pair of housings has a keyed passageway for receiving its respected shaft. A double circumferentially grooved member rests within the passageways of the housings, one groove of the member being reposed within one of the housings, respectively. Each of three ball bearings is urged against one of the grooves of the member by a corresponding spring held by a corresponding set screw within one of the housings. Similarly, three ball bearings are urged against the other groove of the member by separate springs and set screws in the other housing. The outer diameter of the member is less than the inner diameter of the housings so that the member can rotate; however, the spring biased ball bearings assure that the housings cannot move axially with respect to each other.

Each housing has a plurality of pockets (e.g., four) for receiving corresponding ball bearings therewithin. The pockets are located at the central face of the housing. The ball bearings engage the pockets of the two housings. The ball bearings are larger than the pockets so that the driving housing drives the driven housing via the ball bearings. In essence, the member with its associated ball bearings restricts axial movement of the housings, while the ball bearings at the face of the housings enable the driving housing to drive the driven housing though the housings are not exactly coaligned.

3,735,606
METHOD AND APPARATUS FOR THE PRODUCTION OF TEXTILE FABRICS AND THE FABRIC PRODUCED THEREBY
Derek Pollard, Blackburn, England, assignor to Singer Company, (U.K.) Limited, London, England
Filed Feb. 1, 1971, Ser. No. 111,270
Claims priority, application Great Britain, Feb. 3, 1970, 5,154/70
Int. Cl. D04b *35/00*
U.S. Cl. 66—1 **17 Claims**



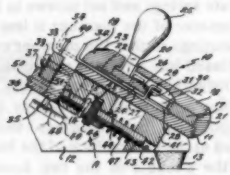
A textile fabric is produced by employing both weaving and knitting techniques simultaneously. The weftwise extending yarns of the fabric are formed by knitting together, within a shed, adjacent loop forming yarns present in such shed and extending in the direction of the warp yarns by needles which are caused cyclically to move into and out of the shed through the sheet of warp yarns, the loop forming yarns being shifted laterally relative to the needles for engagement with respective such needles and the needles being co-operable with different loop forming yarns on successive insertions through the sheet of warp yarns for stitch formation. The co-operation of the needles with different loop forming yarns on successive insertions is achieved by a relative transverse movement of such yarns and the needles.

3,735,607

KNITTING APPARATUS

George K. Jeney, 7024 Southlane, Apt. B, St. Louis, Mo.

Filed July 21, 1971, Ser. No. 164,611
Int. Cl. D04b 7/00
U.S. Cl. 66—60 5 Claims



A knitting apparatus for use by individuals and especially such apparatus for hand operation. The present apparatus incorporates means making it easily adjustable to accommodate different thickness of yarns and patterns for the work pieces.

ERRATUM

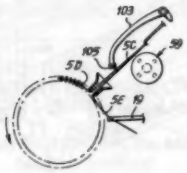
For Class 66—104 see:
Patent No. 3,735,812

3,735,608

YARN TENSIONING DEVICE FOR CIRCULAR KNITTING MACHINES AND THE LIKE

Giorgio Billi, Firenze, Italy, assignor to G. Billi & C. S.p.A., Firenze, Italy

Filed Feb. 4, 1971, Ser. No. 112,694
Claims priority, application Italy, Feb. 10, 1970, 9359 A/70
Int. Cl. D04b 15/44
U.S. Cl. 66—125 R 9 Claims



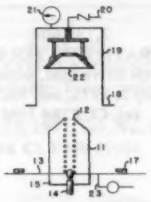
Apparatus used with a circular knitting machine having a rotary needle cylinder to yeildingly tension the starting end of a yarn knit upon the needles of the machine, the apparatus comprising, a first radially movable hook to engage the yarn extending between a few needles temporarily anchoring the yarn and yarn guide feeding the yarn at a first knitting station, means to withdraw the first hook and the yarn through a tube disposed adjacent the needle circle, a second hook to engage the withdrawn yarn and to present it to a winding reel to be clamped therein and to be wound thereon as the yarn is released from the anchoring needles, then, as the yarn is knit by the needles, the winding reel, which is driven through a slip clutch coupling, exerts yielding tension upon the starting end of the yarn by slippage of the clutch and which also winds up and unwinds the starting end of the yarn as knitting proceeds around the revolving circle of needles. Upon completion of a stage of the knitting, the starting end of the yarn is anchored in the fabric by knitting the same upon a few needles at a second knitting station of the machine afterwhich the yarn is severed.

3,735,609

YARN BULKING APPARATUS

Larry N. Pearce, Oak Park, Ill., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 48,034, June 22, 1970, Pat. No. 3,702,492.
This application June 1, 1971, Ser. No. 150,944
Int. Cl. D06c 1/04
U.S. Cl. 68—5 C 2 Claims



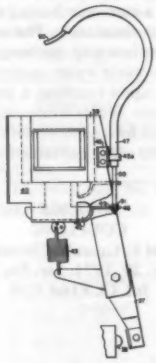
Apparatus to bulk yarn in package form using a pressure chamber into which a nozzle is moved therein to steam and bulk the yarn package.

3,735,610

DOOR LOCK FOR LAUNDRY APPARATUS

Clayton L. Haller, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1972, Ser. No. 221,183
Int. Cl. D06f 33/02, 39/14
U.S. Cl. 68—12 R 6 Claims



Door lock structure for washing machines having a multiple speed belt and pulley transmission to provide at least two rotative speeds for the clothes containing tub and means, such as a solenoid, for changing from one speed to the other. The lock is actuated during the relatively high speed rotation and is controlled by the same solenoid controlling the transmission. The lock structure is characterized by a rod-in-tube assembly, with one end of the rod attached to the armature of the solenoid and the other end attached to a blocking member which, when moved by energization of the solenoid, assumes a blocking position interfering with a latching mechanism to prevent manually moving the latching mechanism to an unlatching position, thereby insuring that the door remains locked during the high speed operation of the machine.

3,735,611

TREATMENT BARREL

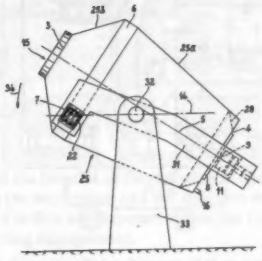
Claude Pillard, Lyon, France, assignor to Centre Technique Du Cuir, Lyon, France

Filed Dec. 30, 1970, Ser. No. 102,601

Claims priority, application France, Apr. 1, 1970, 7011825; Dec. 4, 1970, 7044241

Int. Cl. C14c *1/00*

U.S. Cl. 69—30 18 Claims



Rotary barrel for treating materials, notably hides and skins, adapted to be rotated about an axis tilted to provide an upper bottom and a lower bottom shell, the barrel being rotatably supported by a pair of rollers and driven by one of these rollers, which are disposed adjacent the upper bottom for engagement with a race-forming annular ring rigid with the barrel, the lower end of the barrel being provided with a swivel bearing coaxial thereto. The barrel may have a cylindrical, biconical or cylindro-conical configuration, and be provided with internal pins, studs or bars of straight or helical profile for carrying along the materials to be treated, a drain cock being provided near the outer edge of the lower bottom, possibly with a discharge aperture formed in the wall of revolution adjacent to said drain cock, and a loading aperture formed in the free upper bottom shell, perforated plate means near the bottom inner corner for protecting the drain cock from clogging, and possibly an arrangement of helical ribs whereby rotating the barrel in one direction will perform the treatment while rotating same in the opposite direction will cause the treated materials to be discharged therefrom.

3,735,612

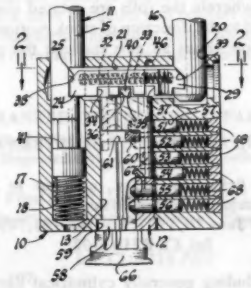
DOUBLE SPRING BOLT RE-KEYABLE PADLOCK

Arcadia Popovici, 211 Currier, Almont, Mich.

Filed June 28, 1971, Ser. No. 157,304

Int. Cl. E05b *67/22*

U.S. Cl. 70—38 A 2 Claims



A padlock having a body and a pair of latch members in the body which are spring biased into a locked position to hold a padlock shackle in the locked position and which are moved to the unlocked position by a cam member on a key plug. Passage means are provided in the lock construction, and including the latch members, for the reception of a retainer member capable of retaining the outer tumbler pins in the body and for retaining the latch members in the unlocked position to permit the key plug to be removed and the lock re-keyed.

3,735,613

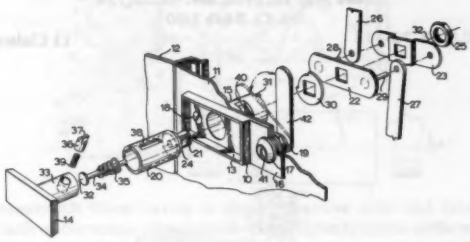
RETRACTABLE DOOR HANDLE AND LOCK

Howard Diebel, Jordan Station, Ontario, and Albert De Man, Vineland, Ontario, both of Canada, assignors to Moyer Diebel Limited, Jordan Station, Ontario, Canada

Filed Mar. 22, 1971, Ser. No. 126,763

Int. Cl. E05b *5/04*

U.S. Cl. 70—208 6 Claims



A retractable door handle, especially suited for vending machines to prevent forcing of the door while locked, is mounted for movement between a retracted position and an extended operative position. A spring urged latch retains the handle in the retracted position when it is moved into that position. A key operated lock is mounted displaced from the handle and includes a latch-releasing member which can be moved upon insertion of the key to unlatch the handle latch, whereupon the handle is moved by a spring to the extended position to be grasped by an operator.

3,735,614

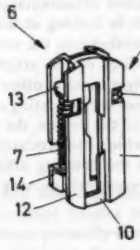
CYLINDER LOCK

Ernst Keller-Volper, 6 Querstrasse, 8805 Richterswil, Switzerland

Filed Dec. 14, 1971, Ser. No. 207,834

Int. Cl. E05b *15/14*

U.S. Cl. 70—377 9 Claims



A cylinder lock for an insertable profile key having a cylinder core with tumbler assemblies each composed of displaceable plate members mounted back to back for slidable movement in a direction perpendicular to the longitudinal axis of the cylinder core, each tumbler assembly being inserted into a respective slot in the cylinder core, the plate members being urged into recesses in an external cylinder housing by helical compression springs. Each plate tumbler is provided with a central portion which is U-shaped in cross-section, and outwardly protruding flanges are attached to the arms of the U-shaped portion, the outer surfaces of each flange of each tumbler assembly slidably abutting against the walls of the slot in the cylinder core. The outer surfaces of the central bridges of the U-shaped portions of the tumbler plates of each as-

sembly slidably abut against each other and at least one helical compression spring for each tumbler assembly is arranged in a channel defined by opposed flanges of the tumbler plates of each assembly, the spring engaging a tongue bent from each flange.

3,735,615

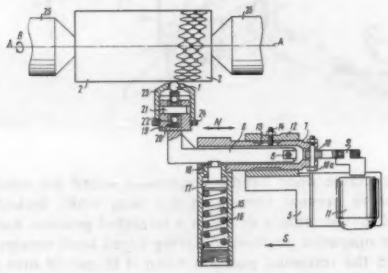
METHOD OF MAKING GROOVES ON SURFACE OF ARTICLES AND DEVICE FOR ITS REALIZATION

Jury Gdalievich Shneider, prospekt Stachek, 134, kv. 19, Leningrad, U.S.S.R.

Filed May 19, 1970, Ser. No. 38,739

Int. Cl. B44b 5/00

U.S. Cl. 72—75 **11 Claims**



The machining of the surfaces of articles for making grooves intended to retain liquid or gaseous media used for lubrication or as an interlayer to the devices for the realization of these methods, and to the articles machined by these methods.

Most successfully the invention can be used in machining the surfaces of cylinder liners, pistons and the walls of the holes in the pistons for the piston pins in internal combustion engines and in machining sliding and rolling contact bearings, spinning machine rings, and gauge blocks.

No less successfully this invention can be used for machining the reflectors of heating appliances, fountain pen caps, various vessels and articles of jewelry, because the network of grooves forms an attractive ornamental pattern.

The method consists in forcing at least one spring-loaded spherical deforming member into the surface layer of the article. The machined surface of the article and the deforming member move at an angle to each other and the motion of at least one of them is either reciprocating or rotary.

In the various forms of the device, the deforming member is mounted in a holder which reciprocates and moves progressively with relation to the rotating article holder or rotates with relation to the progressively moving article holder.

3,735,616

METHOD OF AND APPARATUS FOR CORRUGATING TUBING

James Arthur Francis Donelan, Alresford, England, assignor to Pirelli General Cable Works Limited, London, England

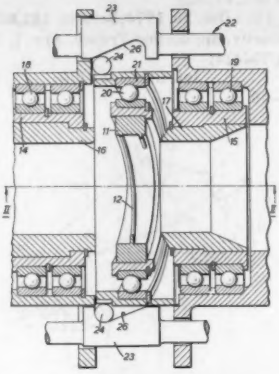
Filed Oct. 19, 1970, Ser. No. 82,048

Claims priority, application Great Britain, Nov. 27, 1969, 58,100/69

Int. Cl. B21d 13/00

U.S. Cl. 72—77 **5 Claims**

In an apparatus for corrugating metal tubing, such as an electric cable sheath, the working ridge which bears against the tubing to corrugate the tubing is of a material having a modulus of elasticity lower than that of the tubing-metal. Both the material of the working ridge and the material of bushes positioned either side of the corrugating ridge to support and



locate the tubing as it is moved axially through the apparatus are of low friction.

3,735,617

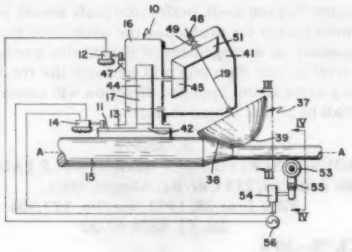
ROLLING MILL

Erich Bretschneider, Buderich, Germany, assignor to Siemag Siegener Maschinenbau Gesellschaft mit beschrankter Haftung, Dahlbruch, Germany

Continuation-in-part of Ser. No. 749,178, July 31, 1968, abandoned. This application Oct. 19, 1970, Ser. No. 81,934

Int. Cl. B21b 13/20

U.S. Cl. 72—78 **12 Claims**



A rolling mill for attenuating elongated metal stock by the rolling method, wherein the rolls are rotated about axes substantially inclined to the direction of stock motion and are also rotated as a group about an axis through the center of the stock.

3,735,618

METHOD AND APPARATUS FOR INTERNAL GEAR ROLLING

Elmer S. Zook, Princeton, Mass., assignor to Reed Rolled Thread Die Company, Holden, Mass.

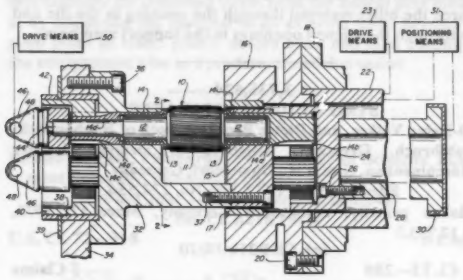
Filed June 10, 1971, Ser. No. 151,743

Int. Cl. B21h 5/02

U.S. Cl. 72—91 **11 Claims**

Apparatus including generally cylindrical dies carried on parallel axes and positioned within a bore of a workpiece. Rotation of the dies and the workpiece concurrently with axial relative movement between the circumferential surface of the dies and the bore rapidly rolls internal gear teeth in the bore without waste of workpiece material. The dies preferably are radially displaced inwardly with respect to the axis of the bore prior to being withdrawn from the bore. The method of rolling

internal gear teeth includes positioning a plurality of cylindrical dies in generally parallel axial relationship within a bore of a workpiece, relatively angularly moving the exterior surface



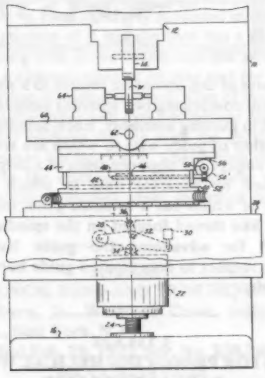
of the dies and the interior of the cylindrical opening, and relatively moving the workpiece and the dies into nesting relationship whereby the dies are disposed within the cylindrical opening in interferring engagement.

3,735,619

GEAR ROLL CHAMFERING

Richard W. Tersch, Grosse Pointe Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Jan. 27, 1972, Ser. No. 221,357
Int. Cl. B21h 5/00
U.S. Cl. 72—98 **9 Claims**



Helical gears are rolled to improve tooth surfaces and in the same operation have the acute end corners of the teeth chamfered. The chamfering precedes finish rolling so as to avoid displacement of metal above the tooth profile.

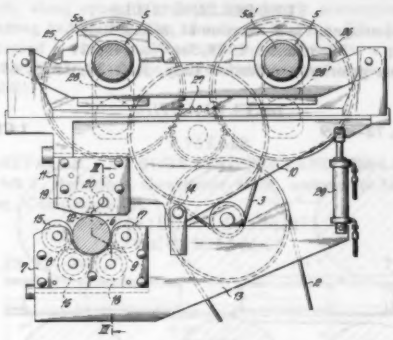
3,735,620

CRANKSHAFT ROLLING APPARATUS

Hans-Joachim Naumann, Wassenberg, Germany, assignor to Wilhelm Hegenscheidt Kommanditgesellschaft, Erkelenz, Germany

Filed Feb. 7, 1972, Ser. No. 223,892
Claims priority, application Germany, Sept. 21, 1971, P 21 46 994.3
Int. Cl. B21h 7/00
U.S. Cl. 72—107 **10 Claims**

A crankshaft blank, having a cylindrical surface to be rolled and at opposite axial ends of which there are crankshaft fillets, is held between two lever arms under pressure. The lever arms are associated with a pair of master crankshafts in such a manner that, when the master crankshafts are rotated, the lever arms move correspondingly and in unison therewith. A tool unit is provided on one of the arms and includes a tool roller having axially arrayed portions of mutually opposite conicity, or two separate rollers which are conical in mutually opposite direction. The single roll or the two rollers engage the cylindrical surface of the blank intermediate the



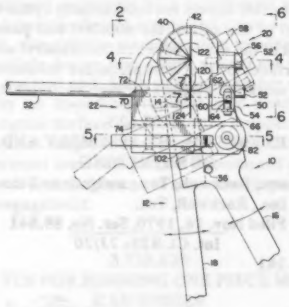
crankshaft fillets having at their respective axial end faces radii of curvature merging into their circumferential surfaces; these radii of curvature are smaller by between substantially 20–30 percent than the radius of the crankshaft fillets on the blank and thus also of the crankshaft fillets on the master crankshaft which are identical with the crankshaft fillets on the blank.

3,735,621

HAND OPERATED TUBE BENDER

Harry G. Dodge, Painesville, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed Oct. 12, 1971, Ser. No. 188,489
Int. Cl. B21d 7/04
U.S. Cl. 72—156 **7 Claims**



The specification and drawings disclose a hand operated tube bender. The disclosed bender includes a pair of rigid frame members which are pivotally interconnected for oscillation about an intermediate axis. Portions of the frames on one side of the axis comprise operating handles to allow manual oscillation. Carried on one of the frames on the side of the axis opposite the handles is a forming roller with a peripheral, semi-circular groove sized to closely receive the outer circumference of a tube to be bent. Releasable lock means are carried on the roller for clamping a tube in the groove. Associated with the forming roller and carried on the same frame is a forming shoe having a generally semi-circular groove along one side and mounted to oscillate between a first lock position where it cooperates with the forming roller to closely engage the tube at the point of bend, and a second position where it is spaced from the forming roller to allow the tube to be inserted or removed. The forming roller is driven by a ratchet drive including a ratchet wheel drivingly connected to

the forming roller and a pawl which is pivotally connected to the second frame and ocated so that when the frames are oscillated toward one another, a drive force is imparted to the forming roller.

3,735,622

TUBE ROLLING MILLS

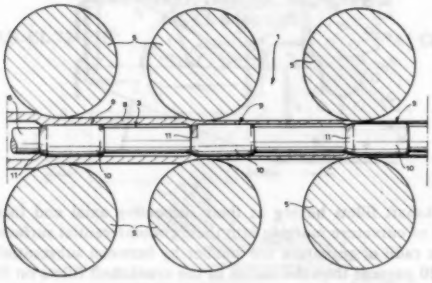
Carlo Montagna, Via S. Martino 11, Milan, Italy

Filed June 3, 1971, Ser. No. 149,421

Claims priority, application Italy, June 25, 1970, 69197 A/70

Int. Cl. B21b *17/10*

U.S. Cl. 72—209 **1 Claim**



A rolling mill for seamless tubes, of the type having a central mandrel extending between the rolls of all the roll stands and which is surrounded, in use, by a tubular workpiece. The mandrel is held in a fixed position with respect to the roll stands and has an enlarged portion where it passes between the rolls of each roll stand. Successive enlarged portions are smaller in diameter so that a gradual reduction of the diameter of a workpiece is achieved as the workpiece passes through the rolling mill. The front end of each enlarged portion is curved so that in axial section the curve is substantially the same as the curve of the cooperating roll and the mandrel is so arranged that the two curves are substantially symmetrical about a line parallel to the axis of the mandrel and passing through the mid-point of the space between the mandrel and the roll so that both surfaces of the workpiece are substantially evenly drawn as the workpiece passes through each roll stand.

3,735,623

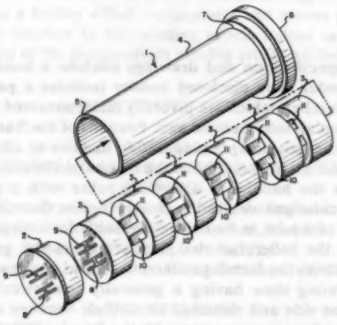
INDIRECT EXTRUSION DIE ASSEMBLY AND METHOD OF EXTRUDING

Alfred W. Mann, Rockwall, Tex., assignor to Texas Aluminum Company, Inc., Rockwall, Tex.

Filed Nov. 16, 1970, Ser. No. 89,841

Int. Cl. B21c *23/20*

U.S. Cl. 72—261 **13 Claims**



A die assembly as used in an indirect extrusion press, the assembly comprising a die member having an opening therethrough, a plurality of separate support members positioned on one side of the die with openings extending therethrough and aligned with, but larger than, the opening in the die, and a guide tube for containing the support members therein and the die at one end. In extruding material through the die assembly, a billet of material is held in a container and the container with the billet is moved toward the die assembly to force the billet material through the opening in the die and then through the aligned openings in the support members.

3,735,624

STRIP GUIDING APPARATUS

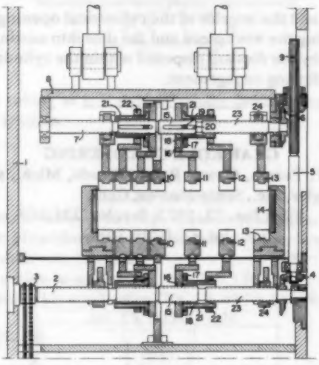
Karl-Heinz Volker, and Dieter Brockow, both of Hilchenbach-Dahlbruch, Germany, assignors to Siemag Siegener Maschinenbau, G.m.b.H., Dusseldorf, Germany

Filed Mar. 14, 1972, Ser. No. 234,556

Claims priority, application Germany, Mar. 17, 1971, P 21 12 753.7

Int. Cl. B21b *39/20*

U.S. Cl. 72—250 **5 Claims**



The disclosure of this invention relates to a strip entry guide for a rolling mill comprising two spindles associated with a top and bottom strip guiding assembly. Each spindle is adapted to support a number of guide bars to which are secured wooden elements that engage the opposite sides of a strip. This support is accomplished by separate nuts to which the bars are secured, each of which has a selected pitch thread that corresponds to a like thread formed on the spindles or an intermediate shaft for advancing the guide bars prescribed distances with respect to coordinated guide bars on the other side of the guide.

3,735,625

APPARATUS FOR PRODUCING HELICAL WIRES, RODS, BARS AND THE LIKE

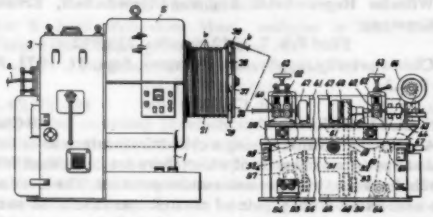
Masatugu Murao, Osaka, Japan, assignor to Naniwa Seitei Company, Ltd., Osaka, Japan

Filed July 15, 1971, Ser. No. 162,920

Claims priority, application Japan, July 28, 1970, 45/175536

Int. Cl. B21c *1/00*; B21b *15/02*

U.S. Cl. 72—275 **3 Claims**



An apparatus comprising in combination a machine for producing an elongated helical wire by drawing a wire materi-

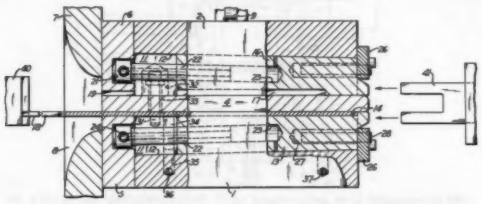
al of circular cross-section into a noncircular cross-section such as a square shape by cold working and twisting the wire material in one direction at the same time and an automatic straight wire cutting-off machine disposed in series with the first machine for removing strain from the helical wire material by subjecting the material to an external force beyond the yield point to effect plastic deformation and then cutting-off the straightened wire in a predetermined dimension.

3,735,626

UPSETTING DIES

Roland E. Cale, Pittsburgh, Pa., assignor to Schaefer Equipment Company, Pittsburgh, Pa.

Filed June 14, 1972, Ser. No. 262,646
Int. Cl. B21d *19/10*
U.S. Cl. 72—318 **6 Claims**



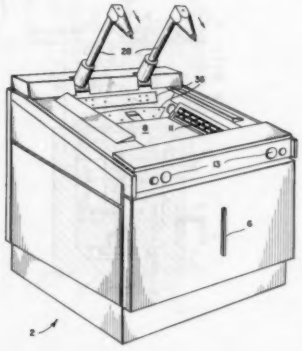
A pair of die holders normally engage the opposite sides of a plate between them and are provided with recesses facing the plate and extending lengthwise of it, with the wall of each recess opposite the plate sloping outwardly away from the plate from front to back. Slidably mounted in each recess for movement lengthwise of it is a die that has a sliding face engaging the sloping wall of the recess and has an opposite face provided with a channel open at its rear end for receiving the heated end portion of wide thin stock. One of the channels has less depth than the other and extends farther forward. Means are provided for pushing the die with the shallower channel rearwardly to upset the stock in it, after which the upset stock is transferred to the channel in the other die which is then pushed rearwardly to further upset the stock to make it still thicker.

3,735,627

PUNCH, BEND AND TRIM DEVICE

William H. Eburn, Jr., Westport, Conn., assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 29, 1972, Ser. No. 230,248
Int. Cl. B21d *43/28*
U.S. Cl. 72—324 **2 Claims**



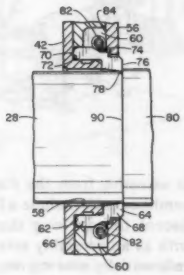
The invention disclosed is a device having means to punch, bend and trim a metal backed printing plate to effect accurate registration onto a press. Registration areas are first provided in proper alignment relative the printing areas of the plate being processed. Next, means are provided for positioning the registration areas in fixed location prior to shearing of the plate along the width and length edges thereof. Shearing of the length, along opposite ends of the plate is accompanied by punching saddle engaging slots, and bending. The plate so processed is ready for accurate introduction into a printing press where the ends are conveniently secured in place about a saddle.

3,735,628

METALLIC CAN BODY STRIPPERS AND THE LIKE

Patrick F. Hutchison, Hawthorne, Calif., assignor to Standun, Inc., Compton, Calif.

Filed May 11, 1972, Ser. No. 252,246
Int. Cl. B21d *45/00*
U.S. Cl. 72—344 **7 Claims**



A series of stripper members are mounted by a retainer ring so as to be moved outwardly by a cup-shaped article during movement of the cup-shaped article and a ram end rearwardly therethrough, the stripper members then moving inwardly to engage the article during ram return movement and strip the article from the ram end. Such stripper member movement is controlled by an encircling resilient ring bearing inwardly against an angular surface on each of the stripper members so that the resilient ring simultaneously exerts axial forces to retain the stripper members properly positioned and properly pivotal, as well as radial forces to ensure such proper pivoting and article engagement.

3,735,629

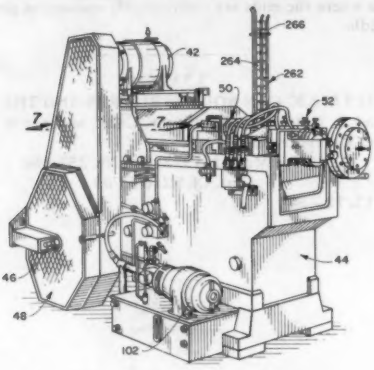
APPARATUS FOR FORMING ONE PIECE METALLIC CAN BODIES

Elpidifor Paramonoff, Los Angeles, Calif., assignor to Standun Inc., Compton, Calif.

Filed June 11, 1970, Ser. No. 45,430
Int. Cl. B21d *22/28*
U.S. Cl. 72—349 **20 Claims**

A horizontally movable ram is mounted on a main frame longitudinally reciprocal in a forward working stroke and a rearward return stroke through a rotating crankshaft drivingly connected to the ram by a plurality of pivot arms, the pivot arms being specifically arranged for longitudinally moving the ram at a reduced comparative speed directly approaching and following the ram stroke rearward reversal than directly approaching and following the ram stroke forward reversal permitting an increased period of time for feeding of metal parts to be engaged and worked by the ram. The ram is mounted on the main frame through hydrostatic-type pressurized oil film bearing assemblies with the ram being supported at a rearward location by combined horizontally extending and vertically extending constantly pressurized and flowing oil films with a more forward portion of the ram being additionally

peripherally supported by a cylindrical constantly pressurized and flowing oil film. The apparatus die pack may include an initial redraw die and a series of ironing dies, each of said dies including a die ring resiliently retained for limited radial movement and also adjustment alignment, as well as arranged in the particular die for selective removal out of its particular die assembly by pivoting of a cover plate without complete



removal of the die assembly from the die pack. Additionally, the ironing die assemblies each include a fluid distribution ring longitudinally adjacent the die ring thereof and preferably removable therewith as an assembly arranged to tangentially distribute a circumferentially moving ring of liquid across the distribution ring ram opening providing lubrication and cooling for the dies and metal parts being formed.

3,735,630

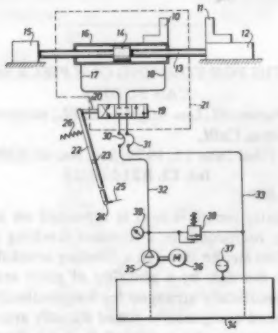
MACHINE FOR BENDING

Harald Sondergaard, Bagsvaerd, Denmark, assignor to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Filed May 4, 1971, Ser. No. 140,157

Int. Cl. B21d 5/01

U.S. Cl. 72—389 **3 Claims**



A machine for bending metal strip includes a power-driven reciprocating tool the movement of which is controlled by a governing means that is adapted to be moved to arbitrary positions continuously followed by the reciprocating tool.

3,735,631

HYDRAULICALLY POWERED COUNTER-BLOW HAMMER

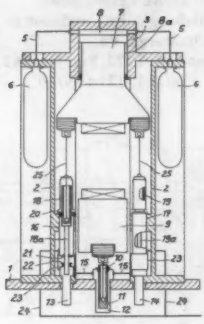
Heinz Schmoll, Huckeswagen, and Dieter Jenke, Gruiten, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Nov. 23, 1971, Ser. No. 201,439

Claims priority, application Germany, Nov. 25, 1970, P 20 57 958.2

Int. Cl. B21j 9/10

U.S. Cl. 72—407 **1 Claim**



A hydraulic counter-blow hammer having a hydraulic coupling system for making the tups move in opposite directions and a hydraulic retraction system for retracting the tups prior to a stroke. The hydraulic retraction system is combined with the hydraulic retraction system without there being hydraulic intercommunication between the two systems. Differential pistons are connected to the upper tup and the differential pistons have two working faces moving in two different but co-axial cylinders. One cylinder is in the hydraulic coupling system for coupling the lower tup to the upper tup and the other cylinder is in the hydraulic retraction system for retracting the upper tup.

3,735,632

FLUID-PRESSURE ACTUATED PRESS-TOOL EQUIPMENT

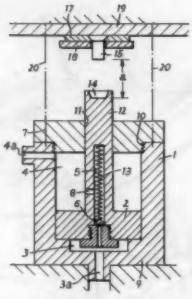
John Leslie Hilton, Ringwood, Hampshire, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Nov. 5, 1971, Ser. No. 196,052

Claims priority, application Great Britain, Nov. 10, 1970, 53,314/70

Int. Cl. B21j 9/12

U.S. Cl. 72—453 **4 Claims**



To avoid damage to press-tool equipment, to the workpiece and/or to a body obstructing the path of the tool during its ap-

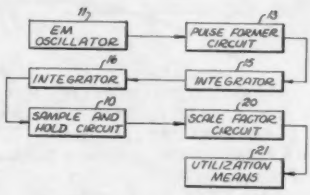
proach to the beginning of the working stroke, a hydraulic actuating piston is bypassed by a passage including a port which is blanked-off by the piston entering a blanking cover due to the piston movement when the tool commences its working stroke proper.

3,735,633

FUNCTION GENERATOR AND COMPONENTS THEREOF

Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,070
Int. Cl. G01n 9/00
U.S. Cl. 73—32 4 Claims



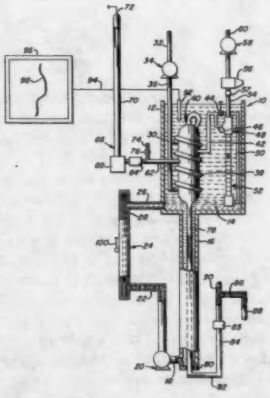
A vibration densitometer that computes and transmits the difference between actual density and a known, constant reference density. A pulse former circuit produces a pulse train useful in producing a linear density difference analog. Two integrators and one sample and hold circuit are employed in the computation. A single one shot actuates both integrators and the sample and hold circuit. A scale factor circuit is employed for calibration and to convert the difference analog to an analog of absolute density. The difference density analog makes possible the computation and transmission of density data with an extraordinarily high degree of accuracy. However, the difference density analog is produced with a very small, unique system.

3,735,634

VAPOR-OVER-LIQUID TEMPERATURE ANALYZER

Russell M. Clinton, Gibsonia; James A. Condron, Freeport, and Richard T. Mator, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 4, 1971, Ser. No. 150,132
Int. Cl. G01n 33/22
U.S. Cl. 73—64.2 23 Claims



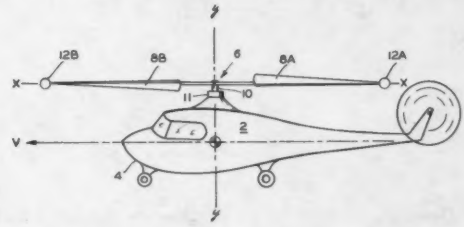
An on-stream vapor-over-liquid ratio temperature (V/L) analyzer comprising a system wherein a constant volume of gasoline per unit time is supplied to a bomb, and pressure, temperature, and volume of vapors removed are held constant at some particular value simulating some particular V/L ratio and corresponding V/L ratio temperature. In the event of a change in the V/L ratio of the gasoline, only pressure will vary in response thereto, and this change in pressure is made to cause an inverse change in the temperature to bring the system back to the initial operating pressure. In general, the temperature required to maintain a fixed V/L ratio is measured.

3,735,635

TRUE AIRSPEED MEASURING APPARATUS

Edward J. Hazen, Woodcliff Lake, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 21, 1970, Ser. No. 100,241
Int. Cl. G01c 21/10
U.S. Cl. 73—181 7 Claims



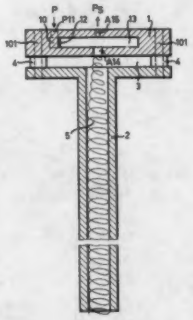
Apparatus relying on the adiabatic temperature rise due to stopping a moving stream of air for determining the velocity of that air. Temperature sensors are mounted at opposite ends of a rotating arm for eliminating the need to measure static temperature and for providing a linear relationship between velocity and temperature measurements.

3,735,636

LEVEL FEELER

Alun Burke, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed July 16, 1971, Ser. No. 163,267
Claims priority, application Switzerland, Aug. 7, 1970, 11910/70
Int. Cl. G01b 13/12
U.S. Cl. 73—290 R 4 Claims



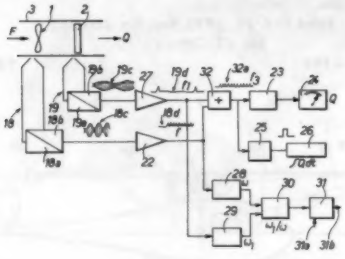
A level feeler, especially a liquid level feeler of the type containing fluidic circuit components and a feeler tube, wherein the feeler tube is arranged and constructed such that within the effective proximity zone of the fluidic-vortex-proximity

feeler there are provided openings communicating with the surrounding atmosphere and the helically-shaped advancing or propagating feeler vortex of the fluidic-vortex-proximity feeler can penetrate without hinderance into the feeler tube and can be guided by such feeler tube.

3,735,637
FLOW-METER AND VISCOMETER

Pierre Marie Marcel Penet, 4, Rue de Bourgogne, Creteil, France

Filed Apr. 15, 1971, Ser. No. 134,306
Int. Cl. G01f 1/00; G01m 11/00
U.S. Cl. 73—231 R **16 Claims**

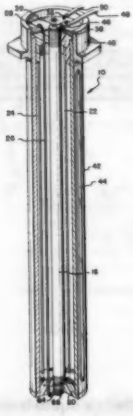


Measuring apparatus of the impeller-type flowmeter kind, designed to be mounted inside a conduit for ducting a fluid flow and comprising an impeller supported for unrestrained rotation about a shaft arranged longitudinally inside the conduit. In accordance with the invention, a rotor is supported for unrestrained rotation coaxially with and downstream of the impeller and carries blades which lie substantially in planes passing through the rotor axis, whereby a comparison between the impeller and rotor rotation speeds ω and ω_1, respectively, enables the accuracy of the flow rate measurement to be monitored and can provide an indication of the viscosity of the fluid.

3,735,638
LIQUID LEVEL MEASUREMENT DEVICE

Bernard J. Miller, Andorra Road, Lafayette Hill, Pa.

Filed Feb. 1, 1971, Ser. No. 111,311
Int. Cl. G01f 23/24
U.S. Cl. 73—304 R **3 Claims**

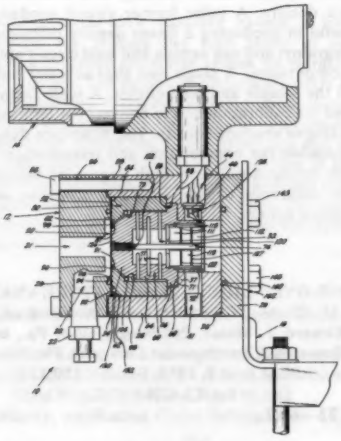


A liquid level measurement device relying upon the principle of a resistance bridge wherein the height sensing means is one resistor of the bridge. The height sensing resistor is comprised of a fine wire extending from the bridge circuit to a grounding rod. The fine wire extends generally parallel to, but spaced from, the grounding rod in order to constitute the height sensor. In use, the height sensor is inserted in the liquid whose height is to be measured in such a way that the grounding rod and the fine wire extend generally perpendicular to the liquid level line. Thus, the aqueous ionic media whose height is being measured will short out that portion of the fine wire below the liquid level to decrease the effective resistance of the height sensor. This has the effect of unbalancing the bridge circuit to give a reading on a meter that is an indication of the height of the liquid.

3,735,639
GAUGE PRESSURE TRANSMITTER WITH INTERCHANGEABLE RANGE ELEMENTS AND RUPTURE PROTECTION

Lloyd T. Akeley, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 17, 1972, Ser. No. 244,547
Int. Cl. G01l 9/10
U.S. Cl. 73—398 R **6 Claims**



A gauge pressure transmitter for producing an electrical output signal proportional to an inlet fluid pressure. The transmitter includes a sensor assembly having a central chamber therein communicating with an inlet fluid manifold. A diaphragm is secured across the inlet fluid manifold at the head of a central chamber and a sleeve and spring are positioned within the chamber, acting against the diaphragm, to oppose movement of the diaphragm responsive to inlet fluid pressure. The cores and windings of a position responsive transducer are mounted within the central chamber and the armature of the transducer is supported upon a shaft that extends centrally of the chamber and is attached at one end to the spring. An O-ring is provided in a gap between the sleeve and spring, upstream of a shoulder on the spring, so that fluid discharged into the gap, such as might occur upon rupture of the diaphragm, drives the O-ring against the shoulder and seals off further flow of the press.. e fluid. The spring, sleeve and diaphragm are confined by a removable pressure body to enable major change of the transmitter pressure range by use of springs having different resiliences.

3,735,640

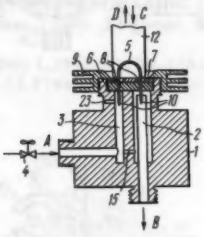
APPARATUS FOR INJECTING A SAMPLE INTO A GAS CHROMATOGRAPH

Leonid Vladimirovich Chizhov, Leninsky prospekt, 82/2, kv. 362; Dmitry Emelyanovich Lengauer, Bolshaya Ugreshskaya ulitsa, 12, kv. 42, and Sergei Alexandrovich Danilin, 1 Ambulatorny proezd, 2/6, kv. 73, all of Moscow, U.S.S.R.

Filed Mar. 10, 1972, Ser. No. 233,525

Int. Cl. B01l 3/02; G01n 1/10

U.S. Cl. 73—422 GC 6 Claims



An apparatus for introducing a liquid sample into a gas chromatograph, including a heated housing having located therein a liquid sample evaporation chamber and a gauge pressure chamber and further incorporating means for establishing a pressure differential between the gauge pressure chamber and the evaporation chamber. The liquid sample evaporation chamber is hermetically sealed from the ambient atmosphere and communicates with the source of supply of a carrier gas of the associated gas chromatograph and with the separation column of the same chromatograph. The gauge pressure chamber communicates with the said carrier gas supply source. Each one of the two chambers has an opening tightly closed with a gasket made of an elastic material and intended for introduction thereinto of a needle having two pointed ends and bent so that these two pointed ends extend parallel to each other in the same direction. The needle has an internal longitudinal capillary passage open at both ends, adapted to be filled with a liquid sample that can be transferred into the sample evaporation chamber, after the respective two ends of the needle have pierced the gaskets of the two chambers, the sample being transferred under the action of the pressure differential between the gauge pressure chamber and the evaporation chamber.

3,735,641

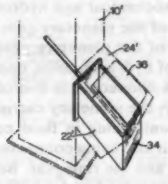
DIVERTING AND SAMPLING GATE

Werner R. Bink, Fort Saskatchewan, Alberta, and George Dempster, Edmonton, Alberta, both of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Oct. 5, 1970, Ser. No. 77,985

Int. Cl. G01n 1/20

U.S. Cl. 73—423 R 5 Claims



A gate for diverting and/or sampling the entire flow of particulate material in an upright chute. The gate includes a gate means positioned to extend slidably from an inoperative position in which the gate means spans substantially none of the cross-sectional area of the upright chute means through an opening in a wall of the upright chute to an operative position in which the gate means spans the entire cross-sectional area of the upright chute. Not only is the chute easily constructed and operated, it permits taking a sample with greater confidence in the qualititative and quantitative analysis of the sample.

3,735,642

CURVE DRIVE FOR OSCILLATING MOTIONS ON WINDING RODS OF STATOR WINDING MACHINES

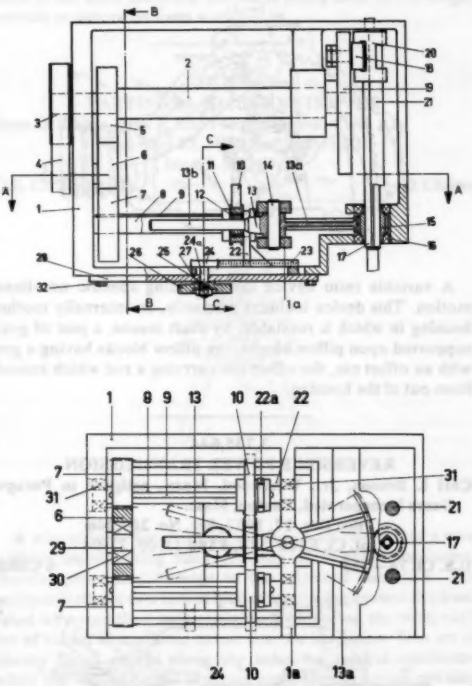
Lothar Hoppe, Zurich, Switzerland, assignor to Microfil A.G., Zurich, Switzerland

Filed June 30, 1971, Ser. No. 158,207

Claims priority, application Germany, July 6, 1970, P 20 33 417.2

Int. Cl. F16h 21/00

U.S. Cl. 74—23 5 Claims



A drive mechanism for imparting a combined synchronized reciprocating and oscillatory movement to a winding rod or bar of a stator winding machine for laying in the conductors includes a main drive shaft coupled to one mechanism which converts rotary motion of the drive shaft into reciprocating motion of the winding bar which is guided in a longitudinal direction through a bore in a rotatably mounted oscillatory bush. The bush bore and bar have non-circular surfaces, e.g., polygonal so as to effect oscillation of the winding bar as the bush is oscillated and at the same time as the winding bar is reciprocated. Another mechanism provided for oscillating the bush includes an oscillatory articulated arm having a gear segment located to one side of the axis of articulation and which is meshed with an externally formed gear on the bush, and a shaft portion located to the other side of the articulation axis which is received in the bore of a rocker bearing. The rocker

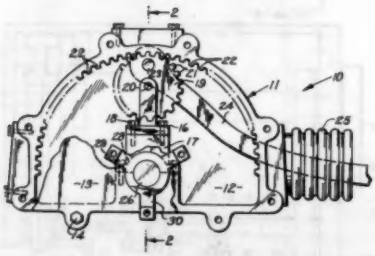
bearing mounts a circular cam follower located between two cam discs which as they rotate impart a reciprocating movement to the cam follower along a path transverse to the axis of the articulated arm which thereby produces the desired oscillation of the latter. The cam discs are slidably mounted on auxiliary drive shafts which are coupled to the main drive shaft by means of a gear transmission, and the cam discs together with the cam follower and rocker bearing constitute a sub-assembly which can be adjusted longitudinally of the articulated arm with respect to the oscillatory axis so as to effect a corresponding change in the angle through which the gear segment is oscillated and hence a corresponding change in the angle through which the bush and winding bar oscillates.

3,735,643

SPECIFIC VARIABLE RATIO ACTUATOR

Willie M. Smith, 3716 S.W. 14th Street, Fort Lauderdale, Fla.

Filed Sept. 13, 1971, Ser. No. 179,977
Int. Cl. F16h 27/02
U.S. Cl. 74—89.16 2 Claims



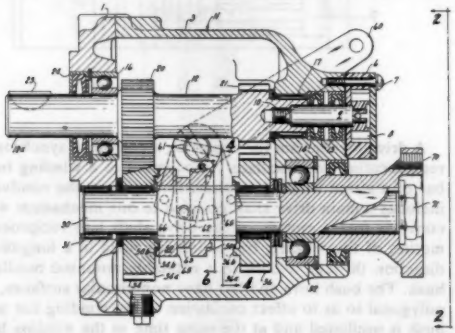
A variable ratio device for producing specific non-linear motion. This device includes primarily, an internally toothed housing in which is rotatable, by shaft means, a pair of gears supported upon pillow blocks, the pillow blocks having a gear with an offset pin, the offset pin carrying a rod which extends from out of the housing.

3,735,644

REVERSIBLE POWER TRANSMISSION

Carl I. Benson, Jr., Westwood, Mass., assignor to Paragon Gears Incorporated, Tauton, Mass.

Filed Dec. 17, 1971, Ser. No. 209,246
Int. Cl. F16h 3/14; F16d 11/06, 21/04
U.S. Cl. 74—355 6 Claims



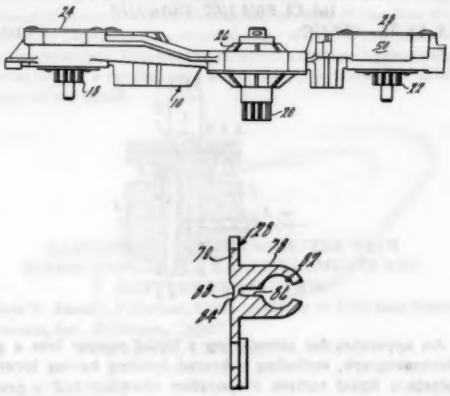
A transmission for transmitting power from a power source to a power output shaft, for example for transmitting power from an engine to a propeller shaft of a water craft. The transmission is particularly compact and the direction of rotation of the driven shaft can be selectively changed.

3,735,645

TRANSMISSION AND HOUSING

Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.

Filed June 9, 1971, Ser. No. 151,179
Int. Cl. F16h 57/02
U.S. Cl. 74—606 10 Claims



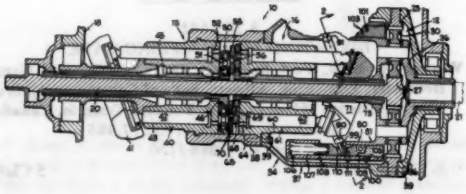
Transmission for connecting a plurality of drive mechanisms to a corresponding plurality of input worms. The gearing is contained in a housing having a plastic cover provided with flexible recessed arms adapted to engage the shafts of the worms to constitute bearings, the arms being received in recesses in the housing to retain them in assembled relation.

3,735,646

HYDROSTATIC TRANSMISSION MECHANISM

Richard E. Roberts, Lombard, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 837,594, June 30, 1969, Pat. No. 3,620,130. This application May 28, 1971, Ser. No. 147,946
Int. Cl. F16h 47/04
U.S. Cl. 74—687 10 Claims



A combined mechanical and hydrostatic transmission having the sun gear of the planetary gear set driven by the input shaft the carrier of the planetary gear set driving the output shaft and a pair of hydraulic units, one of which has relatively rotating elements connected to two of the planetary gear set elements, namely, the planetary carrier and the ring gear, the other hydraulic unit being in fluid communication with the first hydraulic unit and being connected between the fixed element of the case and the ring gear. Both hydraulic units have variable displacement whereby with one of said hydraulic units being at a given displacement, and the other hydraulic unit at zero displacement the ring gear of the planetary gear set will be locked against rotation whereby the full reduction ratio of the planetary gear set is utilized and, in the situation where the said one hydraulic unit is at zero displacement, and

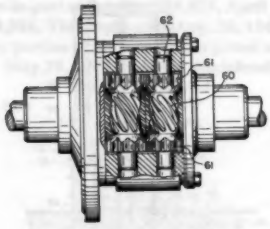
the first hydraulic unit has a given displacement, the first hydraulic unit will lock up the planetary carrier and the ring gear to provide a 1:1 direct drive. In addition, infinitely variable speed ratios are available by having the pair of hydraulic units in various displacement positions relative to the above limits whereby a full range of speed ratios is available between the full reduction ratio of the planetary gear set and a 1:1 direct drive.

3,735,647

SYNCLINAL GEARING

Vernon E. Glaseman, 3808 Kirkwood Road, Cleveland Heights, Ohio

Filed July 1, 1971, Ser. No. 158,672
Int. Cl. F16h *1/42, 1/18, 57/00*
U.S. Cl. 74—715 **5 Claims**



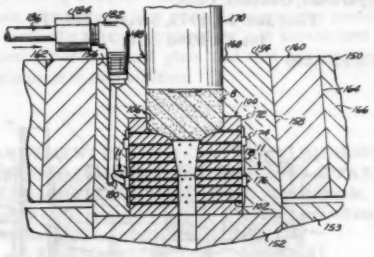
A gear arrangement, wherein a first pair of spur gears, concentric and rigidly connected for simultaneous rotation are in driving relation with a second pair of intermeshing gears similarly arranged, is rendered more effective in the smooth transfer of power by indexing the teeth of one of the concentric gears in at least one pair relative to the other of the concentric gears in the same pair by an amount between one-half of the circular pitch and full registration.

3,735,648

METHOD OF MAKING FLUID-CONDUCTING HOT-FORGING DIE

John Haller, Furstentum, Liechtenstein, assignor to Federal-Mogul Corporation, Southfield, Mich.

Division of Ser. No. 875,975, Nov. 12, 1969. This application June 16, 1971, Ser. No. 153,594
Int. Cl. B21k *5/20*
U.S. Cl. 76—107 A **4 Claims**



A foraminous ordinary-duty-hot-forging die is provided with minute fluid passageways therethrough for the conduction of a coolant, a lubricant or a protective atmosphere under high pressure. A porous hot-forging die is made by forming a briquette of coarse powdered tool metal or carbide, sintering the briquette, machining a die cavity or die bore therein, and heat-treating the thus-formed die for the required hardness and wear resistance.

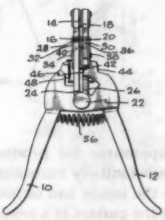
A modified heavy-duty-fluid-conducting hot-forging die is formed from powdered material by loading the die cavity of a briquetting press with a charge consisting of alternate layers of powdered tool metal or carbide and fusible wire inserts extending thereacross and compressing this charge into a briquette. This briquette is then sintered at a temperature below the melting point of the insert material, hot-forged to densify it so as to produce a substantially solid die forging of approximately 100 percent density, annealed, and bored to form a central pilot hole therethrough. The die forging is then vacuum-sintered at a temperature higher than the melting point of the insert material with a sufficiently low vacuum to vaporize the insert material and withdraw it from the body, leaving perforations therethrough. The sintered perforated die forging is then machined to provide the desired shape of die cavity or die bore and finally heat-treated to obtain the necessary hardness and wear resistance. Either form of die is mounted in a bore in a die-holding block having a chamber therearound. During hot-forging operations, this chamber is supplied with a coolant, a lubricant or a protective atmosphere agent under a sufficiently high pressure to force it through the pores of the porous die or through the perforations in the solid die while the die is being used to hot-forge, extrude or otherwise form workpieces.

3,735,649

PARTING BLADE WIRE STRIPPER

Jesse D. Staggs, R.R. 2, Box 143, Fallbrook, Calif.

Filed May 27, 1970, Ser. No. 41,021
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.5 A **2 Claims**



A wire stripper for stripping insulation off one end of a wire without necessitating hard gripping of adjacent insulation, thereby preventing damage to the adjacent insulation. The stripper includes two sets of blades for closing against the insulated wire, and then separating while closed on the wire, each set of blades constructed to cut into the insulation. One set of blades which moves along the insulated central conductor when the sets of blades separate has a slightly larger opening than the other set of blades, to reduce the possibility of scratching the conductor.

3,735,650

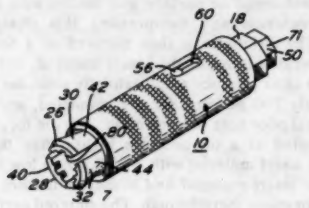
EXTRACTOR TOOL

Francis H. Weng, Jr., 4023 Redden Road, Drexel Hill, Pa.

Filed Feb. 17, 1971, Ser. No. 116,070
Int. Cl. B25b *13/50*
U.S. Cl. 81—53.2 **3 Claims**

An extractor tool comprising a collet and means for tightening the collet about a member (such as a studhead or the like) in which the follet has an annular array of pointed teeth which form the leading edge of the collet, which extend beyond the remainder of the collet, and which are the first portions of the

collet to contact the studhead or the like. The pointed teeth are pyramid-like in shape and with a stop wall to the rear of



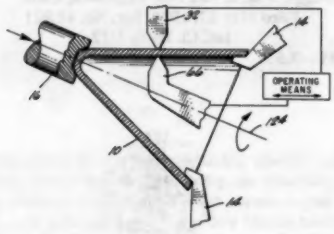
the teeth define a notch which receives material of the studhead or the like which is displaced by the teeth as the collet is tightened about the studhead.

3,735,651

SHELL MACHINING APPARATUS

Lloyd Hartford, Northridge, Calif., assignor to The Marguardt Corporation, Van Nuys, Calif.

Filed Oct. 21, 1968, Ser. No. 769,197
Int. Cl. B23b 5/36
U.S. Cl. 82—15 **3 Claims**



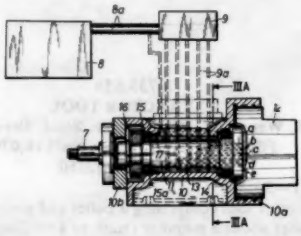
A method and apparatus for producing a shell body of revolution with a substantially constant wall thickness comprising cutting both the inside and outside surface of the shell simultaneously with the cutters at a predetermined fixed spacing.

3,735,652

HEADSTOCK FOR TURNING MACHINES EQUIPPED WITH INDEXABLE CHUCKS

Hans Scharfen, Buderich, Germany, assignor to Paul Kommanditgesellschaft, Dusseldorf, Germany

Filed July 30, 1970, Ser. No. 59,647
Claims priority, application Germany, Feb. 4, 1970, P 20 04 940.5
Int. Cl. B23b 19/02
U.S. Cl. 82—30 **5 Claims**



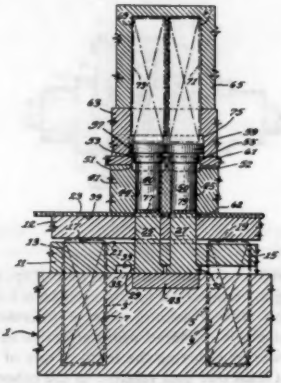
A headstock for turning machines having pressure fluid operable rotatable and indexable chuck means and stationary pressure fluid conveying means for conveying control fluid to said chuck means, in which in the housing of said headstock there are provided at least two spindles respectively connected to a chuck, said spindles being adapted to be driven by a common drive in a synchronous manner while for each spindle the pressure fluid conveying housing means for the respective chuck is arranged on the pertaining spindle between two roller bearings supporting the respective spindle.

3,735,653

METHOD FOR MAKING KNOCK-OUTS IN ELECTRICAL BOXES FORMED OF PLASTIC MATERIAL

James C. Powell, Elkhart, Ind., assignor to All-Steel Equipment Inc., Aurora, Ill.

Division of Ser. No. 783,584, Dec. 13, 1968, Pat. No. 3,580,122. This application Dec. 7, 1970, Ser. No. 95,922
Int. Cl. B26d 7/18
U.S. Cl. 83—1 **3 Claims**



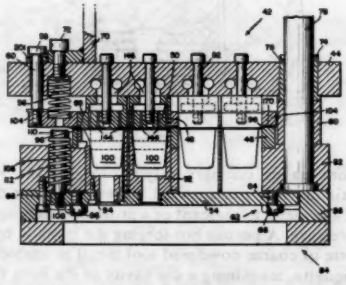
Knock-outs are formed in electrical fixtures, such as connector boxes made of plastic sheet material by punching the knock-outs from plastic sheet or blanks prior to shaping into the fixture or by shaping the fixture and then punching out the knock-outs. By resiliently supporting the material surrounding the knock-out area on the punch side and resilient biasing a knock-out stripper against the surface of the knock-out opposite that contacted by the punch, knock-outs can be punched out and replaced in the material in a single operation if the opposite biasing forces of the support and knock-out stripper are properly correlated.

3,735,654

BLANKING MACHINE VACUUM SYSTEM

Walter R. Jurasek, Gustine, Calif., assignor to Avoset Food Corporation, Oakland, Calif.

Filed Jan. 24, 1972, Ser. No. 220,311
Int. Cl. B26d 7/20, 7/06
U.S. Cl. 83—100 **2 Claims**



A fixed upper die member of a blanking press has manifold means and means to exhaust air from said manifold means.

Passages extend from the manifold means through the lower face of the upper die member to urge a web which passes below the upper die member into contact therewith. The press is associated with a generally conventional blanking machine having means to step feed a continuous web to the press below the upper die member and above a reciprocable lower die member, a conveyor adjacent the upper die member and means to remove the waste portion of the web. Upper punches conforming to the tops of the cup are fixed with the lower die being moved upwardly beyond them to cut the tops of the cups clear of the web, the said tops being held to the punches by a cup stripper.

3,735,655

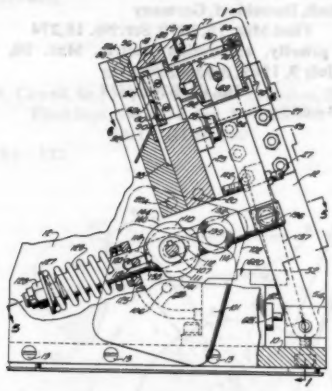
CARD COVER SHEET APERTURING APPARATUS

Francis A. Dedona, Sherman Oaks, and James W. Lucas, Los Angeles, both of Calif., assignors to Scionics Businesss Products, Inc., Rochester, N.Y.

Continuation-in-part of Ser. No. 274,025, April 18, 1963, Pat. No. 3,248,986. This application Aug. 26, 1965, Ser. No. 482,881The portion of the term of this patent subsequent to May 29, 1986, has been disclaimed.

Int. Cl. B26f *1/44*

U.S. Cl. 83—140 **3 Claims**



1. In apparatus of the character described, a cutter assembly having a support; four cutting knives mounted on said support in a rectangular pattern and with respect to a common plane on said support with each knife having a cutting edge inclined with respect to said plane and with adjacent ends of adjacent knives extending unequal distances from said plane; an apertured plate slidably mounted on said support to a position extending forwardly of and surrounding said knives; and spring means acting between said plate and said support normally urging said plate to said position.

3,735,656

ARRANGEMENT IN AND RELATING TO HIGH SPEED IMPACT COLD PLANAR FLOW SHEARING APPARATUS

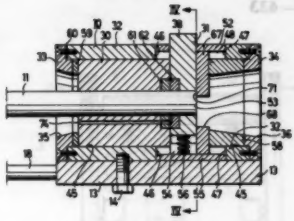
Per-Olof Strandell, Taby, and Carl-Erik Ridderstrale, Lulea, both of Sweden, assignors to HJO Mekaniska Verkstad K & V., Smedberg, Hjo, Sweden

Filed May 12, 1971, Ser. No. 142,611

Int. Cl. B26d *3/16*

U.S. Cl. 83—198 **3 Claims**

An improvement in high speed impact, cold planar flow shearing apparatus having a stationary shearing die and a movable shearing member and with which the shearing member is subjected to an impact force of such magnitude that the member is given at least sufficient energy to stress the stock to the point of fracture. The improvement consists of an axial support member located adjacent the movable die member and extending into the path of the stock so as to support the stock axially during the initial portion of the shearing sequence but so as to be out of engagement therewith before



fracture of the stock is completed. The improvement also includes means which positively stop downward movement of the shearing member substantially immediately the slug has been sheared from the stock.

3,735,657

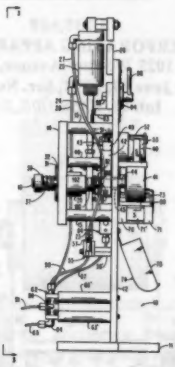
APPARATUS FOR CUTTING STRIPS OF MATERIAL

Volker Schmidt, Todds Road, R.R. No. 7, Lexington, Ky., and Erich A. Schmidt, 2415 Liberty Road, Lexington, Ky.

Filed Mar. 9, 1971, Ser. No. 122,384

Int. Cl. B26d *5/20*

U.S. Cl. 83—209 **15 Claims**



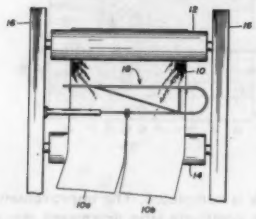
Material is fed between a pair of rollers by a pneumatically driven rack rotating a gear, which is connected to one of the rollers through a one direction clutch. When the rack moves downwardly to rotate the roller, a valve is activated just prior to downward movement of the rack stopping to cause a pneumatically powered knife to cut the fed material. Upon completion of cutting of the material, another valve is activated to return the knife to its inactive position and move the rack upwardly to its start position, which is determined by the position of an adjustable stop that limits the upward movement of the rack. This stop determines the amount of downward movement of the rack so as to select the length of the fed strip of material that is cut. In another embodiment, the non-driven roller is moved away from the driven roller when the thickness of the strip of fed material exceeds a predetermined thickness. When the thickness of the strip ceases to exceed the predetermined thickness after having exceeded the predetermined thickness, the non-driven roller is returned toward the rotated roller to cause activation of a valve to stop the downward movement of the rack and activate the knife irrespective of the position of the rack. This results in the thickened portion, which is not usable, being cut as close to the end of the thickened portion as possible so as to reduce material waste.

3,735,658

PLASTIC CUTTING APPARATUS

Jimmie R. Swann, Coahoma, Tex., assignor to Cosden Oil & Chemical Company, Big Springs, Tex.

Filed June 14, 1971, Ser. No. 152,881
Int. Cl. B26d 3/08
U.S. Cl. 83—433 3 Claims



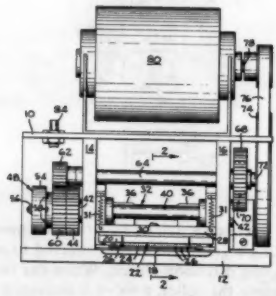
Elongated plastic sheet material is cut longitudinally into strips of uniform, predetermined width by passing the plastic sheet material through a cutting device in the direction of its longitudinal axis wherein at least one blade member extends through the sheet material, thereby severing it longitudinally. The blade or blades are maintained in a fixed position relative to the sheet notwithstanding lateral movement of the sheet by a guide mechanism which engages the longitudinal edges of the sheet and instantaneously moves each blade member to correspond with lateral movement of the sheet.

3,735,659

PERFORATING APPARATUS

Hollis E. Button, 1025 W. Parr Avenue, Campbell, Calif.

Filed June 17, 1971, Ser. No. 154,119
Int. Cl. B26d 3/08, 5/16
U.S. Cl. 83—524 5 Claims



A perforating apparatus for photographic prints or other sheet material including a platen over which the material can be moved and against which a cam-actuated perforating die can be pressed through cyclical actuation to perform the perforating function.

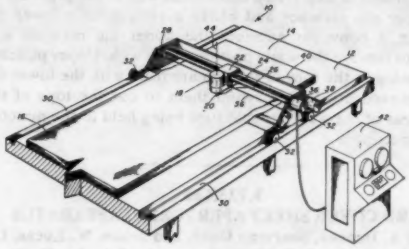
3,735,660

DEVICE FOR CUTTING SHEET MATERIAL

David R. Pearl, West Hartford, Conn., assignor to Gerber Garment Technology, East Hartford, Conn.

Filed July 31, 1970, Ser. No. 59,899
Int. Cl. B23d 27/00; B26d 7/20
U.S. Cl. 83—560 13 Claims

A device for cutting sheet material, such as a layup of fabric sheets spread on a cutting table, includes a cutter head movable over the table and having a vertically reciprocating knife or other similar cutting tool. The cutter head is moved by numeric control relative to the table to cause its tool to follow a desired line of cut, and associated therewith is a bottom plate which moves longitudinally of the table in unison therewith between the supporting surface of the table and the bottom layer of the material to receive the lower or distal end of the cutting tool.

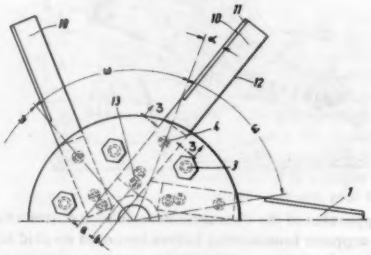


3,735,661

APPARATUS FOR CUTTING OF FIBER STRANDS

Norbert Eichler, and Kurt Urban, both of Waidhofen A.D. Ybbs, Austria, assignors to Gebr. Bohler & Co. Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 10, 1970, Ser. No. 18,274
Claims priority, application Austria, Mar. 10, 1969, A 2329/69; July 9, 1969, A 6564/69
Int. Cl. B26d 1/28
U.S. Cl. 83—675 1 Claim



An apparatus for chopping strands of fibers in which there is provided a rotatable clamping head defined by two disc-shaped members, means for forcing the members against each other and chopping knives clamped between the disc members and protruding therefrom, each knife being defined by a straight metal body of substantially triangular cross-section having a first portion clamped between the disc-shaped members and a second portion protruding beyond the disc-shaped members, with the protruding portion having a knife edge.

3,735,662

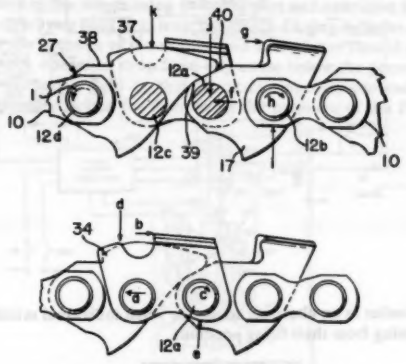
SAW CHAIN

Roy H. Anderson, 1701 90th Street, Bellevue, Wash.

Filed Aug. 11, 1970, Ser. No. 62,848
Int. Cl. B27b 33/14
U.S. Cl. 83—830 8 Claims

A saw chain made up of a series of link sequences with each sequence including cutter link means, a raker tooth link, a depth gauge link, at least one spacer drive link and side connector links. The raker tooth link, the depth gauge link and spacer drive link are center links, i.e., located on the longitudinal centerline of the chain while the cutter link means is

made up of two oppositely facing side cutters located in the general planes of the side connector links, and mounted on common pivotal axes which connect them to both the depth



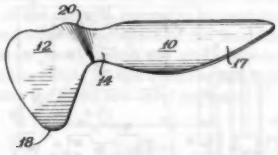
gauge link and raker tooth link. At least one of each pair of side mounted cutter links includes a depth gauge element integral therewith.

3,735,663

MUSCIAN'S PICK

Harold E. Cowell, Sr., 3044 Central St., Evanston, Ill.

Filed Sept. 14, 1972, Ser. No. 288,908
Int. Cl. G10d 3/00
U.S. Cl. 84—322 11 Claims



A musician's pick which includes a plectrum having a strumming tip supported on one end of a handle which is grasped within the fisted palm of the musician. The longitudinal axis of the handle is disposed at an angle to the normal plane of movement of the tip during strumming. By this arrangement the musician may relax the normal grip on the plectrum between the thumb and forefinger but the plectrum continues to be supported by the grasp on the handle thereby positioning the pick for immediate reuse when desired by the musician. The pick is formed from a resilient or flexible sheet material and the plectrum may be integrally formed with or detachably supported on the handle.

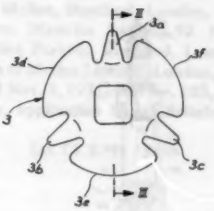
3,735,664

METAL WASHER FOR AN ANCHORING MEMBER

Werner Hermle, Schaanwald, Liechtenstein, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed June 10, 1971, Ser. No. 151,821
Claims priority, application Germany, June 11, 1970, P 20 28 876.0
Int. Cl. A43b 23/20; F16b 19/14, 43/00
U.S. Cl. 85—10 E 5 Claims

A metal washer with resilient tabs extending from its circumferential periphery is used to support an anchoring member, such as a stud, bolt and the like within the barrel of a stud setting apparatus. The tabs have a thickness less than the washer and the roots of the tabs are located inwardly from the circumferential periphery of the remainder of the washer. Preferably, the tabs are equiangularly spaced about the periphery of the washer and the tabs and washer are formed from a single piece of metal. When positioned on the shank of



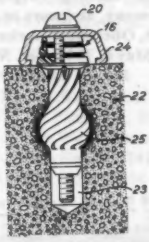
an anchoring member and inserted into the barrel of a stud setting apparatus, the tabs are bent out of the plane of the washer and provide a resilient support in contact with the surface of the barrel.

3,735,665

EXPANDABLE SCREW ANCHORING DEVICE AND A SPACING MEMBER THEREFOR

Louis Aackersberg Mortensen, Petersholm Hillerodvej 1, 3480 Fredensborg, Denmark

Filed Mar. 15, 1971, Ser. No. 124,097
Claims priority, application Denmark, Mar. 16, 1970, 1298
Int. Cl. F16b 13/06
U.S. Cl. 85—71 4 Claims



An expandable screw anchoring device for fastening recessed or concavely shaped members, such as sectional iron members, to a wall or plate. The anchoring device comprises a spacing member to be positioned between the wall surface and the concavely shaped side of the member to be fastened, in order to prevent the anchoring device be partly drawn out of the bored hole in the wall when the screw cooperating with the anchoring device is tightened. According to the invention the spacing member is shaped in such a manner and/or made from such a material that it is axially deformable so that the length of the spacing member will automatically be adjusted to the "rise of arch" of the concavely shaped member when the screw is tightened. Thus, anchoring devices with spacing members having one and the same length may be used for fastening members having different "rise of arch."

3,735,666

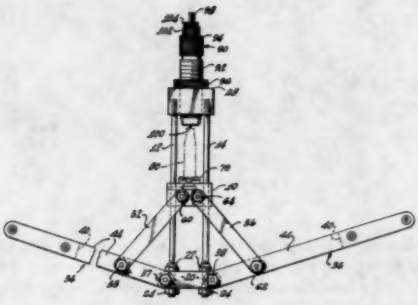
HAND LOADING PRESS FOR FIELD USE OR THE LIKE

Harold D. Decker, 1160 Manley Drive, San Gabriel, Calif.

Filed May 17, 1971, Ser. No. 144,092
Int. Cl. F42b 35/02
U.S. Cl. 86—24 4 Claims

A ram element is slidable on parallel rods, which at one end are secured to a die holder into which standard rifle and pistol dies are threaded along an axis parallel to and midway between the rods. At their other end, the rods are secured to a

base to which hand operated levers are pivotally mounted. Sliding movement of the ram is effected through links connected between it and the levers. The links are arranged so that of the force components applied to the ram from the levers, all but those directed parallel to the axis of the die



holder are balanced out. The ram is adapted to releasably hold seats for cartridge cases of different sizes, and has a central opening through which a primer cap passes upon being ejected from a spent case by a die decapping pin as the ram forces it into the die held in the die holder.

3,735,667

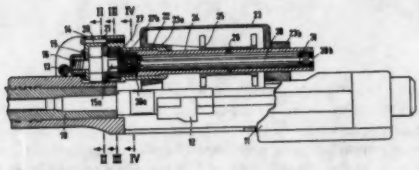
CARTRIDGE FEEDER DEVICE FOR AUTOMATIC FIREARMS WITH A DRIVE MECHANISM INDEPENDENT OF THE BREECHBLOCK

Gerhard Hupp, and Ludwig Vorgrimler, both of Oberndorf/Neckar, Germany, assignors to Messrs. Mauser-Werke Aktiengesellschaft, Oberndorf/Neckar, Germany

Filed May 6, 1970, Ser. No. 35,042

Int. Cl. F41d *9/02*

U.S. Cl. 89—33 CA **8 Claims**



A cartridge feeding device including a torsion spring mechanism which is interposed between a drive member and a cartridge feeding member and which functions as an energy accumulator.

3,735,668

MISSILE LAUNCH CONTROL SYSTEM

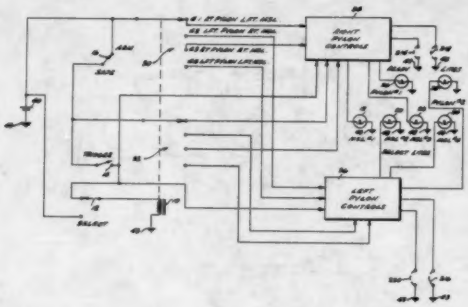
Leo O. Langlois; Ralph T. Tadaki, both of Los Angeles; John R. Ellis, Jr., Thousand Oaks, all of Calif.; Roy W. Stevens, Jr., and Robert H. Leech, both of Tucson, Ariz., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Dec. 10, 1970, Ser. No. 97,452

Int. Cl. F41f *3/04*

U.S. Cl. 89—1.814 **4 Claims**

A control system for launching missiles from aircraft wherein said missiles are automatically prepared and fired in either an individual or ripple fire sequence, particularly embodying logical mechanisms for arming and firing said missiles in predetermined sequence, including the arming and firing of



said missiles in an alternate sequence when individual missiles are missing from their firing positions.

3,735,669

ELEVATING DEVICE IN PARTICULAR FOR PAINT SPRAYING PLANTS

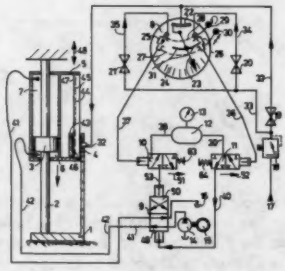
Erich G. Henke, Immenhoferstr. 19, Stuttgart; Helmut F. Braun, Kirchstr. 7; Karl L. Scholl, Argenstr. 76, both of Kressbronn, and Rudolf Schubert, Oberreitnauerstr. 24, Lindau, all of Germany

Filed June 3, 1970, Ser. No. 43,016

Claims priority, application Germany, June 6, 1969, P 19 28 855.2

Int. Cl. F01b *31/12*; F15b *13/042*

U.S. Cl. 91—1 **10 Claims**



An elevating device for paint spraying comprising a base supporting a guide bar having a piston thereon, a hydraulically movable elevating section slidably mounted on said guide bar, a pneumatic stroke control means including a grooved control member having a control groove therein and apneumatic a pneumatic chamber through which said control member slidably moves, and a pneumatic-hydraulic transducer means for controlling the hydraulically movable elevating section by the pneumatic stroke control means.

3,735,670

FLUID-ACTUATED CHUCK-OPERATING MECHANISM WITH A FLUID LOCK

Gordon W. Smithson, Westerly, R.I., assignor to Cushman Industries, Incorporated, Hartford, Conn.

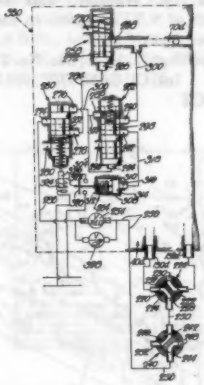
Division of Ser. No. 30,636, April 22, 1970, abandoned. This application Nov. 22, 1971, Ser. No. 200,992

Int. Cl. F15b *12/042*; F23b *31/30*

U.S. Cl. 91—32 **3 Claims**

Fluid-actuated chuck-operating mechanism having an operationally turning cylinder with a piston therein, a swivel coupling with companion parts of which one part turns with

the cylinder and the other part is operationally non-turning, with operating fluid under a given high-level pressure being supplied to the non-turning coupling part for its transmission through the latter part and its turning companion part to either cylinder end, and a unit having operating parts embodied in the non-turning coupling part and operative to lock the operating fluid in at least the chuck-closing cylinder end in case the pressure of the supply fluid to the latter should during a chuck operation drop from any cause below the pressure of the operating fluid in this chuck-closing cylinder end, and featuring a device for decreasing the pressure of the fluid in



the chuck-closing cylinder end from the given high-level pressure to a given low-level pressure, which includes a manual control and a fluid passage by-passing the operating parts of the fluid-lock unit and leading directly to a fluid passage in the non-turning coupling part which, through a passage in the turning coupling part, is in permanent communication with the chuck-closing cylinder end, with this device being, on manipulation of the control, operative to vent the chuck-closing cylinder end until the pressure of the fluid therein reaches a given minimum level below the given low-level pressure, then discontinue venting of this cylinder end and apply to the latter fluid under the given low-level pressure.

3,735,671

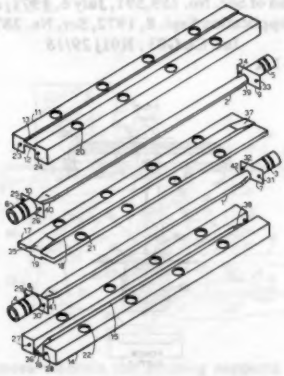
HYDRAULIC POWER MODULE

Frank P. Pennucci, 4165 La Laders Road, Santa Barbara, Calif.

Filed July 12, 1971, Ser. No. 161,686

Int. Cl. F01b *19/00*; F16j *3/00*

U.S. Cl. 92—90 **6 Claims**



Two or more high pressure hoses are stacked and constrained to provide a substantially unidirectional force by means of a floating spacer. The hoses are totally enclosed and operated between two predetermined contours by means of high pressure hydraulic fluid.

3,735,672

CIGARETTE FILTERS

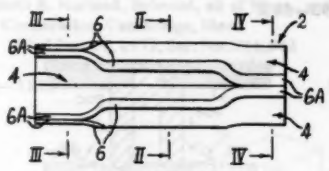
Desmond Walter Molins, Deptford, London, S.E. 8, England; Francis Auguste Maurice Labbe, 92 Neuilly-sur-Seine, France, and Clive Perkins, Deptford, London, S.E. 8, England, assignors to Molins Limited, London, England

Filed Nov. 3, 1971, Ser. No. 195,177

Claims priority, application Great Britain, Nov. 9, 1970, 53,274/70

Int. Cl. B31c *13/00*

U.S. Cl. 93—1 C **7 Claims**



Cross-flow filter elements for cigarettes are made by forming a continuous rod of filter material including a number of substantially axial grooves separated by rib portions; closing alternate grooves at regular intervals by pinching together the ribs; and cutting the rod at regular intervals to form a succession of cross-flow filter elements. The rod is preferably formed by folding inwards circumferentially spaced regions of a continuous tube which itself is formed by bringing together the edges of a continuous web of filter material.

3,735,673

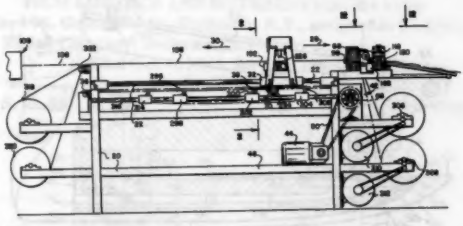
BAG MANUFACTURING MACHINE

Richard S. Sheehan, 1672 S. Elizabeth, Denver, Colo., and Twyman Guard, 795 S. Alton Way, Denver, Colo.

Filed Apr. 4, 1972, Ser. No. 241,037

Int. Cl. B31b *1/64, 49/04*

U.S. Cl. 93—35 R **14 Claims**



A plastic bag producing machine and method adapted for continuous production of plastic bags from extruded tubing such as conventional polyethylene plastic or the like; said machine being adapted for high rate operation in line with an extruder and for receiving plastic tubing in flat condition directly downstream from the extruder and for heat sealing and perforating the plastic tubing at evenly spaced positions therealong, during which time the plastic tubing is constantly moving; said machine having a movable carriage adapted to move backward toward the extruder and to move forward at a rate of movement of the plastic tubing from the extruder, and to heat seal, as well as cool the heat sealed area, while the plastic tubing is clamped between a pair of clamp means to avoid tension separation of the heat sealed portion thereof;

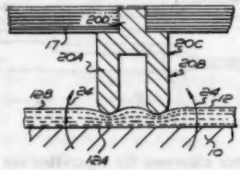
said machine also having separator means adapted automatically to separate each perforated portion of flat tubing for delivering separate bags in timed relation to the heat sealing and perforating functions, or the machine of the invention may be selectively operated to roll the heat sealed and perforated tubing into a roll, if desired.

3,735,674

FORMATION OF CREASES IN BOARD IN OR FOR THE MANUFACTURE OF CARTON BLANKS

George Haddock, Leeds, England, assignor to Alf Cooke Limited, Crown Point, Leeds, Yorkshire, England, a part interest

Filed June 25, 1971, Ser. No. 156,891
Claims priority, application Great Britain, Dec. 9, 1970, 58,350/70
Int. Cl. B31b *1/74*
U.S. Cl. 93—58 R 7 Claims



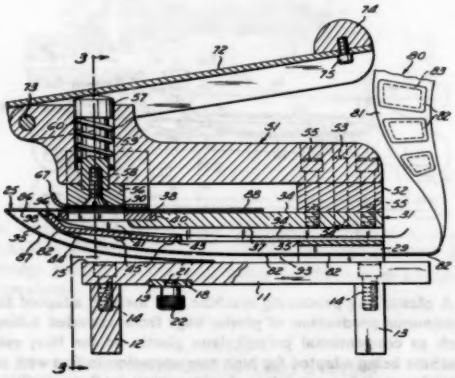
The formation of creases in carton blank board wherein each crease is defined by a pair of closely spaced parallel crease lines. The said pair of lines is formed by the edges of a pair of spaced creasing rules which press the board against a creasing machine platen.

3,735,675

METHOD OF MAKING WINDOW ENVELOPES

Felten Michael O'Neill, 1276 Ramona Avenue, Lakewood, Ohio

Division of Ser. No. 864,675, Oct. 8, 1969. This application Jan. 6, 1972, Ser. No. 215,789
Int. Cl. B31b *1/24*
U.S. Cl. 93—61 A 7 Claims



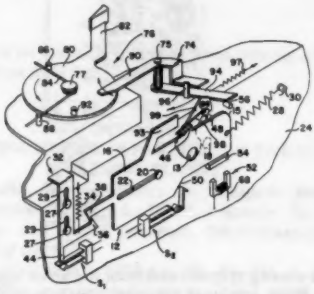
A method is disclosed for producing window envelopes from preformed windowless envelopes. Front and rear wall portions of a preformed envelope are separated, and a window opening is punched in one of the wall portions. A transparent window pane is located in the interior of the preformed envelope between the separated wall portions by a flexible carrier web and is removed from the carrier web within the interior of the envelope by passing the carrier web over a guide plate which abruptly changes the direction of travel of the carrier web. The window pane is removed from the carrier web and affixed to the interior surface of the one wall portion as the envelope is removed from the punching dies. The window panes are adhesively secured to the carrier web in longitudinally spaced apart relation, and the carrier web is fed into and out of the envelopes in a direction substantially parallel to the wall of the envelope to which the window pane is to be affixed.

3,735,676

EXPOSURE CONTROL MECHANISM FOR PHOTOGRAPHIC CAMERAS

Donald M. Harvey, Webster, and David L. Babcock, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,146
Int. Cl. G03b *7/08, 9/62*
U.S. Cl. 95—10 CT 9 Claims



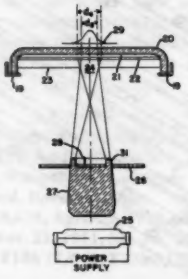
A shutter mechanism wherein a shutter blade is mounted for movement from a first exposure aperture blocking position to an exposure aperture unblocking position in which the shutter blade is retained until a transducer controlled by a light-integrating timing circuit is actuated to release the shutter blade for movement to a second exposure aperture blocking position. According to one embodiment, a shutter blade having an aperture is retained in a first exposure aperture blocking position and adapted to be released for movement under a spring bias into engagement with a stop that positions the blade aperture in alignment with the exposure aperture, and when the transducer is actuated the blade is moved to a second exposure aperture blocking position.

3,735,677

ANNULAR EXPOSURE SOURCE

Michael B. Jones, North Syracuse, and Wilfred D. Rublack, Liverpool, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Continuation of Ser. No. 159,591, July 6, 1971, abandoned. This application Sept. 8, 1972, Ser. No. 287,439
Int. Cl. G03 ; H01J *29/18*
U.S. Cl. 95—1 R 6 Claims



Means for exposing selected portions of a photosensitive surface having an apertured mask disposed in spaced relation-

ship thereto. A source of actinic energy having a substantially annular configuration is disposed at a suitable distance from the side of the mask opposite the photosensitive surface. A major portion of the actinic energy falls upon an area of the photosensitive surface which is smaller than the area of the aperture in the mask, facilitating the photochemical processing of well-defined patterns whose dimensions are less than those of the apertures used to form them.

3,735,678

TEXTURIZED PHOTOGRAPHIC PRINT, METHOD AND APPARATUS

James McC. Smith, 6 B St., Adams, Mass.

Filed Dec. 29, 1969, Ser. No. 888,363
Int. Cl. G03d *15/06*
U.S. Cl. 95—1 10 Claims

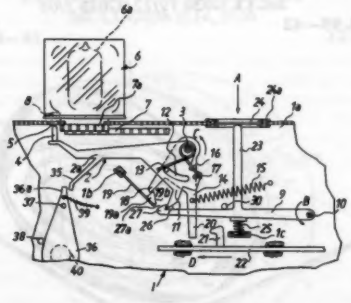
The texturized print includes an image matrix having spaced, molded surface indentations therein. In the method, the softened multi-layer emulsion surface of a photographic color print is pressed into contact with a texturized non-stick surface and hardened so as to mold indentations therein in conformance with the textured surface. In the apparatus, a press means has a textured Teflon surface adapted to be brought into contact with a softened, multi-layer emulsion of a photographic print, so as to mold the emulsion into conformance with the texture of the Teflon surface during the hardening of said emulsion.

3,735,679

CAMERA WITH IMPELLER-ACTUATED SOURCE OF ARTIFICIAL LIGHT

Alfred Winkler, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed May 24, 1971, Ser. No. 146,291
Claims priority, application Germany, May 23, 1970, P 20 25 180.5
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5 R 15 Claims



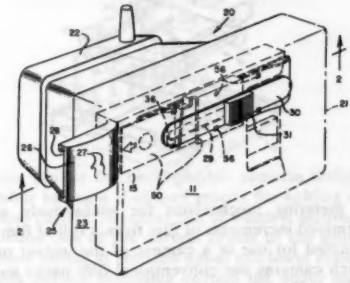
A still camera wherein the housing supports an indexible flashcube having cartridges which must be struck in order to fire the respective lamps. The housing contains a pivotable impeller which is released to the action of a torsion spring to strike against the cartridge for that lamp which faces the subject or scene when the user moves a pivotable release lever from its starting position. A resetting lever is provided to automatically return the impeller to its cocked position as soon as the impeller strikes against the adjacent cartridge. The resetting lever is then moved back to its normal position of engagement with an elastic pawl by a tensioning member which is actuated by the film transporting mechanism. The tensioning member thereby stresses the torsion spring for the impeller as well as a second spring which serves to pivot the resetting lever in a direction to return the impeller to its cocked position.

3,735,680

CONTAINER FOR FILM UNITS AND FLASH ILLUMINATION DEVICES

Sheldon A. Buckler, Lincoln; David P. Kennedy, Cambridge, and Kenneth S. Norland, Belmont, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 10, 1972, Ser. No. 216,542
Int. Cl. G03b *15/02, 19/10*
U.S. Cl. 95—11 L 8 Claims



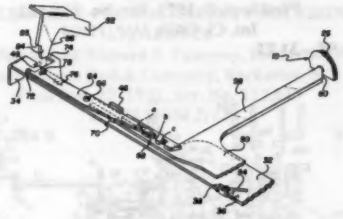
A photographic film assemblage including a container having a wall with an aperture therein through which film units contained within the container may be exposed; a plurality of film units are stacked within the container with the photosensitive areas in alignment with the aperture. Additionally, a plurality of flash illumination devices are also contained within the container.

3,735,681

FILM ADVANCE AND METERING MECHANISM

Floyd M. Galbraith, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,119
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM 10 Claims



A camera for receiving roll film having a leader portion with closer than normally spaced perforations and an exposure portion. A pawl is adapted to sense the perforation spacing. Should that perforation spacing be that of the leader, the camera's shutter release mechanism cannot be activated and the film advance mechanism may be operated to advance more film into the take-up chamber. However, should the pawl sense normally spaced perforations, the film advancing

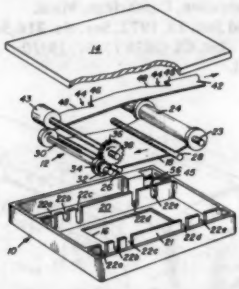
mechanism is disabled and the shutter release mechanism may be activated to take a picture. After the last exposure frame, the film is perforated at the shorter distance to permit running off of the trailer and is finally perforated at a position to prevent further film movement.

3,735,682

STRIP METERING MECHANISMS FOR ADVANCING FILM IN A FILM PACK

Leonard F. Kamp, Rochester, and William P. Ewald, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 24, 1971, Ser. No. 156,253
Int. Cl. G03b *17/18*
U.S. Cl. 95—31 FM **10 Claims**



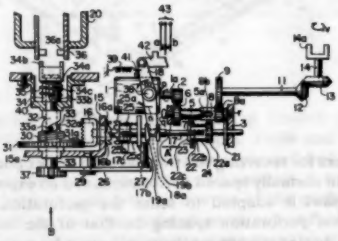
Strip metering mechanisms for successively advancing predetermined increments of film from a roll of film in a film pack adapted for use in a camera of the instant processing type. Such cameras use conventional film packs and do not have a film roll advancing facility. The metering mechanisms comprise a metering strip coupled to a roll of film and adapted when pulled out of the camera a predetermined increment to actuate an audio signal generating device or to lock the film and/or strip to prevent further film advance. The audible signal or strip and/or film lock-up is achieved by notches and ramps in the strip and/or film which actuate the audio signal generating mechanism or the strip and film locking mechanism. The signal is generated, or the strip and/or film locked at the instant that the film has been advanced sufficiently to locate a predetermined increment of film in a correct exposure position.

3,735,683

MOTOR DRIVEN PHOTOGRAPHIC CAMERA

Kaoru Umeda, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka-shi, Osakafu, Japan

Filed Sept. 8, 1972, Ser. No. 288,122
Int. Cl. G03b *1/12*, *19/04*
U.S. Cl. 95—31 EL **6 Claims**



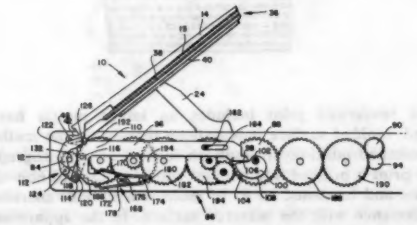
A motor driven photographic camera having a motor for driving a film winding/shutter charging mechanism, wherein there is provided a manually operative shaft for selectively disconnecting the motor from the film winding/shutter charging mechanism for transmitting the rotational movement of the motor to a film rewinding gear. There is also provided a film rewinding shaft which is connected to the film rewinding gear through a stop lever and which is rotatable in coaxial relationship with the film rewinding gear. The film rewinding shaft has a clutch for transmitting the rotational movement thereof to a shaft to film magazine. The rotation of the film rewinding shaft is stopped temporarily for displacing the shaft axially with respect to the film rewinding gear for connecting the clutch of the film rewinding shaft to the film rewinding spool of the magazine. After and while maintaining the engagement between the clutch and the film rewinding spool shaft, the film rewinding shaft is released from its locked position and allowed to rotate for rewinding the film.

3,735,684

REFLEX CAMERA WITH MEANS TO REDUCE MIRROR REBOUND

Edward H. Coughlan, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 26, 1971, Ser. No. 146,881
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **17 Claims**



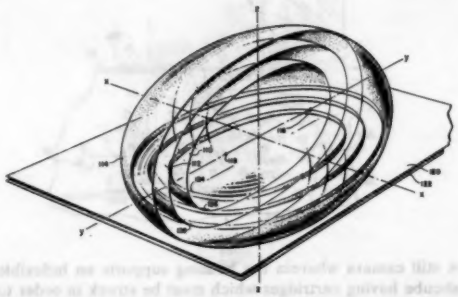
A single-lens reflex camera having a drive system including a variable acceleration erecting arrangement for moving a reflecting member within an optical path from a viewing position to an erected exposure position. The variable acceleration erecting arrangement is operative to selectively impart both positive and negative accelerating forces to the reflecting member during selected portions of its movement. The forces are operative to drive the reflecting member to its exposure position quickly and reduce the elastic rebound which is generated by impact at a contact surface positioned at its erected exposure position.

3,735,685

REFLECTIVE IMAGING APPARATUS

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed May 7, 1971, Ser. No. 141,253
Int. Cl. G03b *19/12*; G02b *3/08*
U.S. Cl. 95—42 **23 Claims**



A reflex camera having an aberration reducing image reflection surface for use in viewing an image, transmitted

through an entrance pupil to the image reflection surface, at an exit pupil remote from both the reflection surface and the entrance pupil.

The reflective surface is generally planar and so formed as to provide a plurality of ellipsoidal segments extending thereover. The ellipsoidal segments are provided with common foci, whereby any light passing through the entrance pupil and impinging on any of the ellipsoidal segments will be reflected to the exit pupil.

3,735,686

CAMERA SYSTEMS

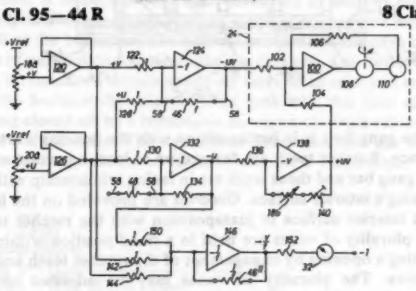
Thomas Howard Brewer, and Roger William Blundell, both of Chelmsford, England, assignors to Sidney R. Littlejohn & Co., Ltd., London, England

Filed Nov. 22, 1971, Ser. No. 200,751

Claims priority, application Great Britain, Dec. 18, 1970, 60,283/70

Int. Cl. G03b 3/00

U.S. Cl. 95—44 R **8 Claims**



A constant focus drive apparatus for controlling the positioning of an object and a lens arrangement in a camera system relative to a desired plane so as to keep an image of the object focused in such plane, comprising means e.g. potentiometers for measuring the object and image distances and for producing distance signals representative thereof, drive means e.g. one or more servo systems and/or a manually controlled motor connected to the camera system for varying both the object and image distances, and a computer which may be analogue or digital and may use electricity, pneumatic or hydraulic power, or other powering medium and which is programmed with the lens formula of the camera system to compute, in accordance with the measured values of the object and image distances, a control signal for application to the drive means to alter one or both of said distances as necessary so that the image is kept focused in said plane.

3,735,687

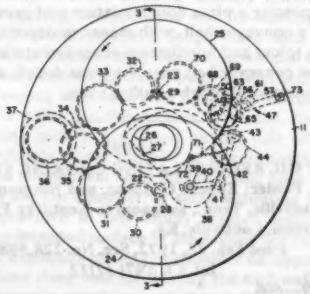
ROTARY SHUTTER

Wallace Sidney Park, P.O. Box 21379, Louisville, Ky.

Filed Nov. 25, 1970, Ser. No. 92,714

Int. Cl. G03b 9/14, 9/16

U.S. Cl. 95—61 **12 Claims**



A high speed camera is especially adapted for aerial photography and it includes conventional rotary discs and a capping shutter. The rotary discs contain openings for alignment with the aperture of the camera. These discs, instead of being rotated synchronously, are rotated at different speeds, e.g. 4 to 3, respectively, whereby the disc openings become aligned with the camera aperture on multiple revolutions of the discs rather than on only one revolution. This permits operation of the capping shutter at a much slower speed, thus avoiding the impact forces of conventonal cameras when operating the capping shutter.

3,735,688

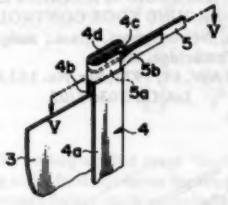
CURTAIN SHUTTER FOR PHOTOGRAPHIC CAMERAS

Mitsuo Noritake, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Osaka-fu, Japan

Filed Aug. 11, 1972, Ser. No. 279,814

Int. Cl. G03b 9/32

U.S. Cl. 95—57 **2 Claims**



A curtain shutter for photographic cameras including an edge member having a U-shaped groove for holding one end of an opaque curtain, the other end of which is secured to and wound around one of the curtain drums of the shutter, the edge member having at both the upper and lower ends thereof a projecting portion extending beyond the upper and lower longitudinal edges of the opaque curtain, respectively, and being provided with a slot at the bottom of the U-shaped groove in each of the upper and lower projecting portions and also with an extension strip integrally connected to one side wall of the edge member. An exposure slit is formed by the opaque curtain in cooperation with the edge member. The other end of each ribbon is inserted into the U-shaped groove through one of the said slots and turned in U-shape around the side wall of the edge member opposite the side wall on which the extension strip is provided. The turned end portions of the ribbons are adhesively secured to the outer surface of the edge member and also to the respective ribbon portions disposed outwardly of the slots. The extension strip is turned onto the turned end portion of the ribbon to cover at least a portion thereof.

3,735,689

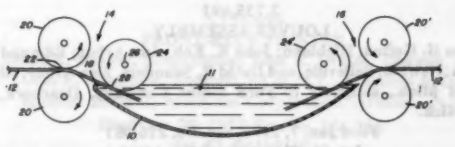
ROLLER TRAY PHOTOGRAPHIC PROCESSING APPARATUS

Frank M. Smola, and Richard S. Pomeroy, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,013

Int. Cl. G03d 3/12

U.S. Cl. 95—94 R **6 Claims**



A straight-through processing apparatus in which film in sheet or web form is fed through a processing solution in a

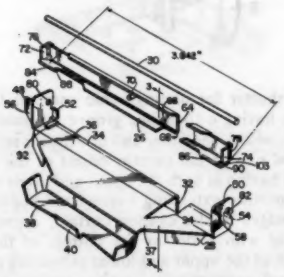
shallow tray by a set of three rollers at the inlet of the tray and a set of three rollers at the outlet of the tray. The inlet set of rollers comprises a pair of opposed, interengaging drive or transport rollers positioned outside of the tray, and a driven guide roller positioned within the tray at the entrance end thereof, and partially immersed in the processing solution. The outlet set of rollers also comprises a pair of opposed, interengaging transport rollers positioned outside of the tray and a driven guide roller positioned within the tray at the exit end thereof, and partially immersed in the processing solution. The film transport distance between the nips or line of contact of the inlet and outlet transport rollers is preferably less than the length of a film being processed, and the nips are positioned above the periphery of the tray at each of its ends. The nip of the inlet transport rollers is arranged below the axis of the guide rollers.

3,735,690

PHOTOGRAPHIC FLUID SPREADING APPARATUS WITH WRAP-AROUND EDGE CONTROL MEMBERS

Earl R. Thoenen, Newburyport, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 14, 1971, Ser. No. 133,905
Int. Cl. G03d 5/02
U.S. Cl. 95—89 R **26 Claims**



Apparatus for use in a camera of the self-developing type to effect the spreading of a processing fluid in a layer between a pair of superposed sheet materials as they progressively pass through the apparatus. A first spreader element is formed of sheet metal and includes a flat sheet-contacting facing surface and a canted platform extending in advance thereof. A second spreader element is formed of sheet metal and includes an arcuate sheet-contacting facing surface and a pair of wrap-around collars comprising extensions of that sheet metal structure curled back thereupon in the direction of its arcuate facing surface. Each facing surface is substantially uniform in cross-sectional configuration and extends entirely across the sheet metal structure in which it is formed. In manufacturing the latter mentioned spreader element, the wrap-around collars are formed subsequent to the development of its arcuate sheet-contacting facing surface. When the two spreader elements are disposed in their operative positions and as the superposed sheet materials are advanced therethrough, the collars engage respective longitudinal edges of the sheet materials against the aforementioned platform to preclude fluid escaping from between the edges of the sheet materials.

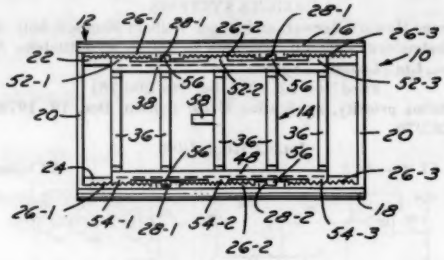
3,735,691

LOUVER ASSEMBLY

Ross H. Gofton, Highland; John K. Koh, Ann Arbor; Edmund A. Newton, Belleville, and David R. Saunders, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 7, 1972, Ser. No. 216,087
Int. Cl. F24f 7/00, 13/06, 13/08
U.S. Cl. 98—121 **10 Claims**

A louver assembly includes a housing having an opeing therethrough which defines at least one interior surface. A plurality of louver vanes are interconnected to a pair of gang bars by living hinges. The connection between the vanes and one of the gang bars is at a corner on a first edge of each of the vanes. The other gang bar is interconnected with the plurality of vanes at a second edge of the vanes. Mounting structure is provided which is in part associated with the housing and in part associated with the interconnected vanes. The mounting structure mounts the vanes in the opening of the housing for pivotable movement with respect to the housing. At least one



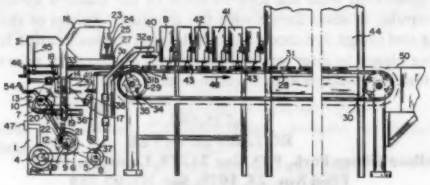
of the gang bars is in juxtaposition with the housing's interior surface. Ratchet teeth are formed on at least a portion of the one gang bar and these teeth are in facing relationship with the housing's interior surface. Grooves are provided on the housing's interior surface in juxtaposition with the ratchet teeth. The plurality of vanes are held in a fixed position within the housing's opening by engagement of the ratchet teeth and the grooves. The plurality of vanes may be adjusted to any selected position by moving the ratchet teeth over the grooves.

3,735,692

AUTOMATIC PIZZA MAKING MACHINE

Albano Marchignoni, Mura D'Azeglio 4, Bologna, Italy

Filed May 4, 1971, Ser. No. 140,056
Claims priority, application Italy, May 5, 1970, 3438 A/70
Int. Cl. A23p 1/00
U.S. Cl. 99—353 **10 Claims**



An automatic pizza making machine continuously intermittently dispensing a pizza dough mixture and pressing it into a disc onto a conveyor belt, with means to deposit different ingredients, spices and condiments at several stations along the path of the conveyor belt onto the pizza dough, and means to pass the conveyor through a baking oven.

3,735,693

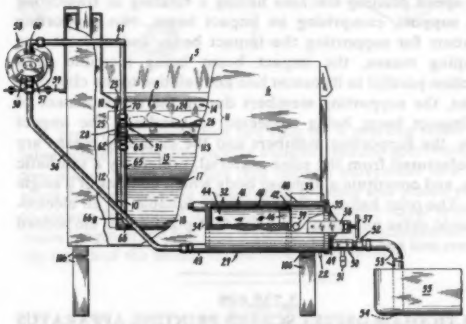
HOT OIL RECIRCULATING COOKING SYSTEM

Arthur F. Pelster; Eugene C. Johns, and Norman C. Sullivan, all of Nashville, Tenn., assignors to Kentucky Fried Chicken Corporation, Louisville, Ky.

Filed Feb. 23, 1972, Ser. No. 228,598
Int. Cl. A47j 37/12
U.S. Cl. 99—408 **10 Claims**

Hot oil recirculating cooking system for deep fat frying of food, such as chicken parts, including a cooking pot chamber

having a bottom outlet and a top inlet. Through flow conduit means connect the bottom outlet to the top inlet where the returned oil is delivered into the pot chamber by spray nozzles. This conduit means includes a pump and a horizontally oriented, closed, openable cylindrical filter tank containing removable filtering equipment. The cooking pot is transversely rectangular with a pair of its opposed, widely spaced sidewalls shaped inwardly toward each other at the bottom of a frying zone of its chamber to provide a pair of upwardly facing, crowned shoulder ledges. Depending from these shoulder ledges these opposed shaped sidewalls define therebetween a downwardly converging, relatively narrow cold zone deep well closed off by a horizontal bottom section, with the other opposed pair of pot sidewalls being arranged in transversley spaced, vertical planes to define convergingly shaped, narrow end walls of this well. The mergence portions of these shaped sidewalls which define these shoulder ledges and the deep well sidewalls are smoothly convexed inwardly and the well bottom section is smoothly convexed outwardly in bubous fashion. The pot chamber outlet opening is provided oi in one well end wall at the bottom of this bulbous section for effective cleanout of particulate solids into the conduit line. The outlet opening is connected throuh a shut-off valve to an inlet end section of the horizontally oriented filter tank with this inlet section being closed off by a removable lid which carries a valved rain and suction tube. The cylindrical filter chamber has nested therein downstream of its inlet section a removable, rigid,



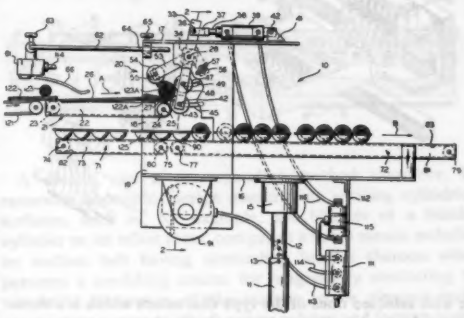
foraminous, cup-shaped basket which supports therein an open-mouth filter bag, and the transverse downstream end of the filter tank has an outlet opening flow connected by a conduit section to the inlet of the pump. The pump outlet is flow connected by a supply conduit section which extends over the rim of the open top of the cooking post down to its chamber for flow connection therein of a nozzle assembly. The nozzle assembly is located at the end wall of the well opposite that which has the outlet opening, and it includes a pair of lateral nozzles each located at one of the mergence shoulder ledges with jet openings thereof directed laterally toward the opposite outlet opening-equipped end wall for washing particulate solids off of this shoulder ledge down into the well. Another nozzle of this assembly depends down into the well to direct a jet therefrom along the bulbous bottom section of the latter for sweeping into the outlet opening particulate solids which tend to collect in this section. A lateral, foraminous, food-supporting rack is supported on the pair of shoulder ledges immediately above the pair of lateral nozzles so that pieces of food thereon will be in the hot frying zone of the hot oil pooled in the pot chamber. A small aspirating and bleed aperture is provided in this supply conduit section in the vicinity of the intended surface of the pooled hot oil. Burners are provided externally of the pot chamber on opposite sides of the cold zone deep well for heating the well walls in their shoulder mergence portions and therebelow, and the oil pooled thereabove in the frying zone.

3,735,694

ROLLING MACHINE FOR STUFFED MEAT "BIRDS" AND OTHER ROLLED ARTICLES

Louis R. Richards, Mokena, and Henry N. Lekan, Chicago, both of Ill., assignors to Formax, Inc., Mokena, Ill.

Filed Sept. 4, 1970, Ser. No. 69,562
Int. Cl. A22c 7/00
U.S. Cl. 99—450.1 **6 Claims**



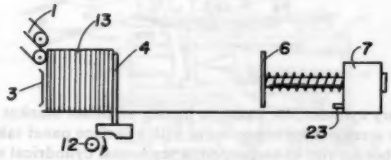
A machine for rolling stuffed meat "birds" and other articles comprising an in-feed conveyor for feeding fat, pliable articles of low memory factor, such as meat patties, into a rolling station. A first power-driven roller blocks the path of the articles at the rolling station, deflecting the leading edge of the article upwardly; other power-driven rollers guide the article backwardly and downwardly so that the article is rolled upon itself. Gate means are provided to displace the first roller away from the end of the in-feed conveyor, when the article has been rolled, discharging the completed rolled article down onto a discharge conveyor.

3,735,695

STACK FORMING AND HANDLING MACHINE

Rolf Bottcher, Markleeberg-ost, Germany, assignor to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany

Filed Feb. 8, 1971, Ser. No. 113,467
Int. Cl. B65b 13/00
U.S. Cl. 100—7 **10 Claims**



In combination, a stacker for fold sheets and a bundling press, the bundling press being arranged alongside the stacker, and means for pushing a stack formed by the stacker into the bundling press.

3,735,696

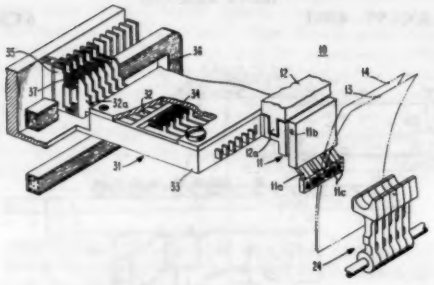
FRONT-BACK PRINTER

Jonas E. Dayger, Binghamton; John E. Drejza, Endwell, and Otto F. Moneagle, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,736
Int. Cl. B41j 9/10
U.S. Cl. 101—93 C **10 Claims**

A printer has continuously moving type character bearing elements moving along a print line on one side of a document.

Type hammers located on the opposite side of the document are operable to impact the document and a type ribbon or the



like with selected ones of the type characters which are themselves selectively advanced towards the hammers by an associated actuating means.

3,735,697

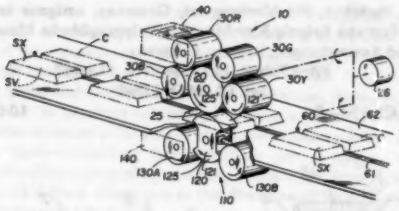
APPARATUS FOR PRINTING ON BOTH SIDES OF THE LIDS OF EGG CARTONS

Alexander R. Provan, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 3, 1970, Ser. No. 94,658

Int. Cl. B41f *17/00*, *17/26*

U.S. Cl. 101—37 **5 Claims**



A rotary cylinder, for example having an offset blanket attached is arranged for engagement with a surface panel raised above a border rim to be printed; a segmental cylindrical element having cylindrical surface portions and, for example, an offset blanket attached to the surface portion is located for engagement with the surface of the obverse side of the panel to be printed. The leading and trailing faces of the segments extend from the obverse surface in a general transverse direction with respect to the center of the cylindrical element, at angles with the faces (with respect to a tangent at the point of junction of the faces and the cylindrical surface) which are so selected that the segmental element may enter into the hollow or cavity formed by the obverse surface and the rim. Ink transfer means, such as ink trains, printing cylinders, and the like are located to be engaged by the segmental cylindrical surfaces. Both the cylindrical element as well as the segmental cylindrical surfaces are driven in synchronism, preferably at a slightly faster speed than the supply and removal speed of the objects to be printed so that any possible drag on the objects by the supply, and removal apparatus, during printing, is avoided.

3,735,698

PRINT HAMMER FOR A PRINTING MACHINE

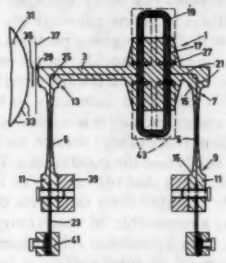
Wilhelmus Leonard Louis Lenders; Hendrik Alle Post; Tjwan Khing Sie, all of Emmasingel, Eindhoven; Johannes Mattheus Visscher, and Marius Quirijnen, both of Rijswijk, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 13, 1970, Ser. No. 63,469

Claims priority, application Netherlands, Aug. 29, 1969, 6913289

Int. Cl. B41j *9/00*

U.S. Cl. 101—93 C **7 Claims**



A print hammer for a printing machine, particularly for a high-speed printing machine having a rotating or translating type support, comprising an impact beam, two supporting members for supporting the impact beam and at least one clamping means, the impact beam being movable in a direction parallel to its center line and relative to the clamping means, the supporting members during the displacement of the impact beam being subjected to bending. The impact beam, the supporting members and the clamping means are manufactured from the same material, preferably a synthetic resin, and constitute a hammer body which consists of a single part. The print hammer is particularly suitable for an electrodynamic drive and comprises for that purpose an embedded magnet coil and embedded current conductors.

3,735,699

MULTICOLOR OFFSET SCREEN PRINTING APPARATUS

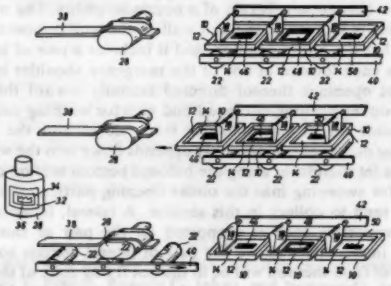
Albert Koelschbach, Cologne-Lindenthal, Germany, assignor to Werner Kammann, Westfalen, Germany

Filed Mar. 31, 1970, Ser. No. 24,251

Claims priority, application Germany, Apr. 5, 1969, P 19 17 520.3

Int. Cl. B41f *15/10*

U.S. Cl. 101—124 **1 Claim**



An apparatus for producing a multi-color image on an object by means of the known silk screen process, wherein there are a number of silk screens each with its own pattern, the number of screens being equal to the number of colors to be employed. Colored printing media is applied with its own doc-

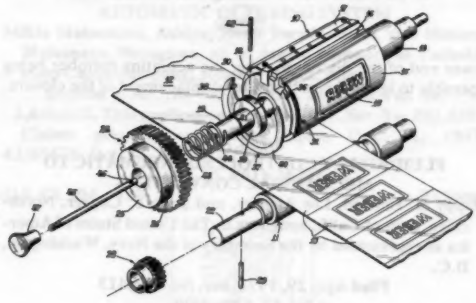
tor blade to an associated silk screen. An intermediate color carrier such as a belt or a plurality of rollers receives a colored image from each screen and applies the colored image in sequence to an article by rolling contact between the article and the intermediate belt or rollers.

3,735,700

TIRE RING DRIVE FOR LABEL PRINTERS

Gerhard K. Roser, Mount Prospect, Ill., assignor to Weber Marking Systems, Inc., Abington Heights, Ill.

Filed Feb. 28, 1972, Ser. No. 229,671
Int. Cl. B41f *13/10*
U.S. Cl. 101—228 **4 Claims**



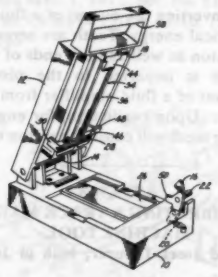
A removably positioned tire ring on a printing roller in a label printer or the like having a slightly spaced apart cooperative platen roller. The tire ring imparts movement to a label stock fed between the cooperating printing and platen rollers to cause a feed out of the label stock a distance equal to the arcuate length of the tire ring which is made commensurate with the length of the indicia on the label being printed.

3,735,701

TRAVELLING CYLINDER PRINTER WITH MEANS FOR LOCKING THE PLATEN AND ASSOCIATED HANDLE IN RETRACTED POSITION

Francis R. Ackerman, Willoughby Hills, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed Aug. 24, 1971, Ser. No. 174,387
Int. Cl. B41f *3/20*
U.S. Cl. 101—269 **1 Claim**



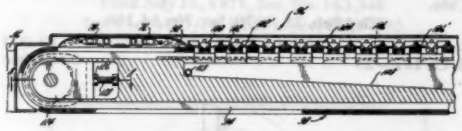
A compact portable data recorder wherein a single handle functions both for operating the platen for recording and for carrying the device. A detent releasably locks the handle in position for carrying the device.

3,735,702

APPARATUS AND METHOD FOR CLEANING ROTATING CYLINDRICAL SURFACES

Joseph J. Kossak, Roselle, N.J., assignor to Oxy-Dry Sprayer Corporation, Chicago, Ill.

Filed May 12, 1971, Ser. No. 142,585
Int. Cl. B41f *35/00*; B41l *41/00*
U.S. Cl. 101—425 **28 Claims**



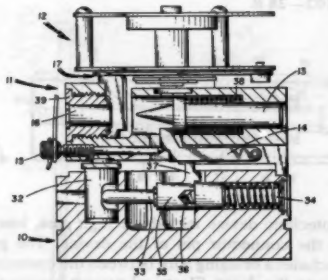
A means, and a corresponding method therefore, for removing undesired foreign matter from rotating cylindrical surfaces, such as, for example, the blanket of a blanket cylinder on an offset press, comprises a scrub means including an endless belt having upstanding bristles thereon which presents a scrubbing course for tangentially contacting the transverse dimension of the surface to be cleaned and a preparation course in which excess solvent and foreign matter is removed from the bristles and solvent applied thereto and a means for drying the scrubbed surface which includes an absorbent wiper roller. In the preparation course, a plurality of flicker bars are interposed to intercept the bristles as they proceed through the preparation course to cause the bristles to flex and to remove the solvent and foreign matter therefrom. Transfer means are provided to receive the solvent and foreign matter and move the same away from the bristles.

3,735,703

FIRING DEVICE FOR LIMPET MINE

Theodore H. Bayer, Dover Plains; David W. Beaman, and Dell K. Tower, both of Poughkeepsie, all of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 15, 1964, Ser. No. 376,300
Int. Cl. F42c *15/10*
U.S. Cl. 102—16 **5 Claims**



1. An anti-removal device for an underwater demolition weapon comprising,

a spring-biased plunger in said weapon adapted for contacting the surface of the target when the weapon is attached thereto,

a detonator for detonating the main charge of the weapon,

a spring actuated firing pin for striking said detonator,

safety means releasably engaging said firing pin for normally holding said pin in a retracted position,

a timing mechanism,

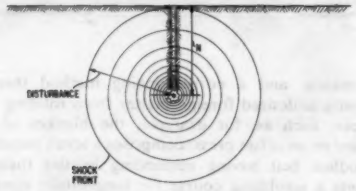
and means actuated by said timing mechanism after a predetermined period of time has elapsed for physically connecting said safety means and said plunger,

whereby the subsequent movement of said plunger in either direction caused by any attempt to remove or tamper with the weapon will cause the plunger to release said safety means and thereby detonate the main charge.

3,735,704
CONTROL BLASTING

Clifton W. Livingston, 624 Panorama Drive, Grand Junction, Colo.

Filed Feb. 25, 1970, Ser. No. 14,166
Int. Cl. F42d 1/00
U.S. Cl. 102—23 **33 Claims**

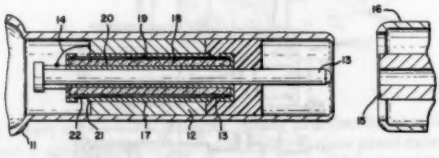


Disclosed herein is a new concept in blasting which is based on a unique theory that permits total utilization of the energy of a blasting charge. The method of this invention enables one, through a set procedure, to control the direction and distance of placement of huge volumes of earth and/or the degree of breakage of a volume of material adjacent the area effected by the blast. The method requires systematic test blasts to determine parameters for use in established formula so that the desired end of control blasting of huge volumes of earth can be attained. The scope of this invention is unlimited in its application to mining, hydropower development, construction projects, etc.

3,735,705
FILTERED ELECTRO-EXPLOSIVE DEVICE

William Jeffrey Hudson, Jr., Hummelstown, and William Baird Fritz, Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 15, 1971, Ser. No. 162,863
Int. Cl. F42b 19/12
U.S. Cl. 102—28 R **2 Claims**



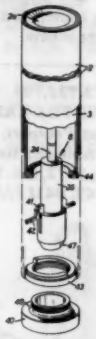
A pyrotechnic device includes a high pass, lossy, ceramic filter on the connector pin of the device. The pyrotechnic device includes a bridging wire between the connector pin and an outer metallic shield. Electrical current passing through the bridging wire detonates an explosive charge. The lossy filter shunts high frequency electrical noise away from the bridging wire thereby preventing accidental detonation of the charge.

3,735,706
PYROTECHNIC DEVICES

William Rupert Brooke Elstow, Laverstock, and Anthony Ronald Witt, Amesbury, both of England, assignors to Pains-Wessex Limited, Salisbury, Wiltshire, England

Filed Apr. 22, 1970, Ser. No. 30,784
Int. Cl. C06d 1/04
U.S. Cl. 102—34.1 **10 Claims**

A signal device comprising a rocket housed in a discharge tube having a closure at its upper end and a closure displacing device including an actuating member in the region of the

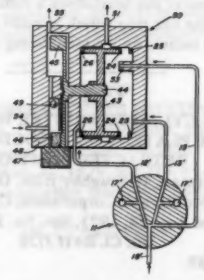


lower end of the discharge tube, the actuating member being operable to ignite the rocket after displacement of the closure.

3,735,707
FLUIDICALLY CONTROLLED PNEUMATIC TO MECHANICAL CONVERTERS

Happy H. Unfried, Los Angeles, and John F. Cogger, Northridge, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 29, 1971, Ser. No. 138,413
Int. Cl. F42c 5/00
U.S. Cl. 102—81 **2 Claims**



A device for converting the output of a fluid amplifier into rotational mechanical energy. Teeth are arranged upon both ends of a short piston as well as both ends of its cylinder. An oscillatory motion is imparted to the piston by rapidly switching the output of a fluid amplifier from one end of the piston to the other. Upon oscillation, for engagement of the piston and cylinder teeth will cause the piston to rotate.

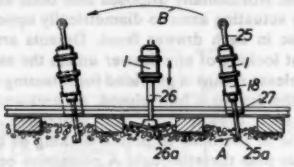
3,735,708
DRIVE FOR VIBRATING A TRACK MAINTENANCE MACHINE TOOL

Franz Plasser, and Josef Theurer, both of Johannesgasse 3, Vienna, Austria

Filed Apr. 7, 1971, Ser. No. 132,048
Claims priority, application Austria, Apr. 17, 1970, 3537
Int. Cl. E01b 27/16, 37/00
U.S. Cl. 104—12 **21 Claims**

A drive for vibrating a track maintenance tool, such as a ballast tamper or a track lining unit, comprises a pneumatic or

hydraulic motor with two pistons which are linearly reciprocated under the pressure of a unidirectionally flowing



pressure fluid whose alternating pressure direction is controlled by a valve in the motor.

3,735,709

BRANCHING AND JOINING APPARATUS IN AUTOMATIC CARRYING SYSTEM

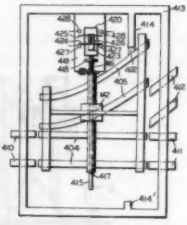
Mikio Matsumoto, Ashiya; Kenji Terada, Sulta, and Mitsuru Matsunaga, Neyagawa, all of Japan, assignors to Tsubakimato Chain Company, Joto-ku, Osaka, Japan

Division of Ser. No. 769,320, Oct. 21, 1968, Pat. No. 3,646,613. This application Nov. 23, 1971, Ser. No. 201,449

Claims priority, application Japan, Oct. 31, 1967, 42/69578; Oct. 31, 1967, 42/17299

Int. Cl. E01b *26/00*

U.S. Cl. 104—130 **2 Claims**



A branching and joining apparatus for use in an automatic carrying system including an electromotive carrier adapted to move along a main rail and at least one sub-rail, said apparatus comprising movable rails located at a location where a branching or joining operation takes place, said movable rails being positively locked at one of a "straight-forward" and a "-branching and joining" positions with a spring substantially compressed, or at the other of said positions with the spring substantially stretched. Said main rail and sub-rail are associated with means for detecting the position of the movable rails.

3,735,710

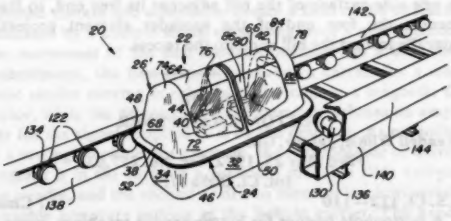
TRANSPORTATION SYSTEM

Jack Hickman, 5766 Fair Oaks Boulevard, Carmichael, Calif.

Filed Mar. 1, 1971, Ser. No. 119,738

Int. Cl. B61b *13/12, 13/10, 13/04*

U.S. Cl. 104—168 **15 Claims**



A transportation system, providing a vehicle having two opposite side walls, each side wall being formed with an outwardly-projecting drive rail, a plurality of electrically-operated rotatable drive wheels being arranged to frictionally engage the undersides of both of the drive rails, for advancement of the vehicle.

3,735,711

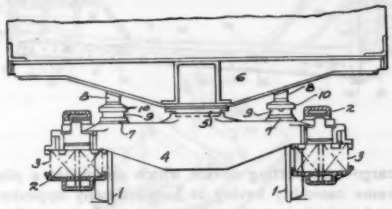
ELASTOMERIC RAILWAY CAR SIDE BEARING

Robert L. Hassenauer, Wilmette, Ill., assignor to Evans Products Company, Plymouth, Mich.

Filed July 16, 1971, Ser. No. 163,346

Int. Cl. B61f *5/14*; F16c *17/04*; F16f *1/36*

U.S. Cl. 105—199 CB **8 Claims**



A railway car side bearing combining in a unitary structure a bottom member and a top member with an elastomeric pad compressed between them, and means definitely limiting the movements of the bottom and top members toward and away from each other irrespective of their association with the car truck and body. The unit is adapted to be mounted on a car truck bolster and to engage a car body bolster but is not to be attached to the body bolster.

3,735,712

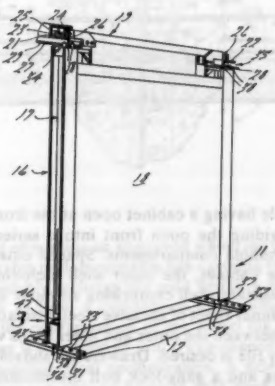
BULKHEAD LOCKING ARRANGEMENT

Raymond M. Krokos, and John J. Kostrewa, both of Detroit, Mich., assignors to Evans Products Company, Plymouth, Mich.

Continuation of Ser. No. 865,277, Oct. 10, 1969, abandoned. This application Jan. 3, 1972, Ser. No. 215,199

Int. Cl. B60p *7/14*

U.S. Cl. 105—376 **2 Claims**

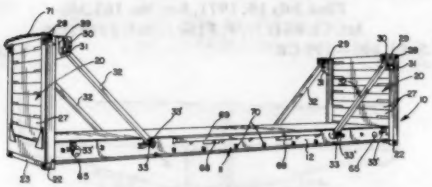


A freight bracing bulkhead assembly embodying an improved locking arrangement that facilitates its release when a load is bearing against the bulkhead. The locking arrangement includes locking pins and supporting sockets that have cooperating tapered surfaces that are in full engagement when the locking pins are in their engaged position and which are spaced apart as the pins move toward their released positions.

3,735,713
CARGO TRANSPORTING DEVICE

John J. Glassmeyer, Covington, Ky., assignor to Pullman Incorporated, Chicago, Ill.

Filed Mar. 23, 1972, Ser. No. 237,317
Int. Cl. B65d 19/38
U.S. Cl. 108—53 12 Claims

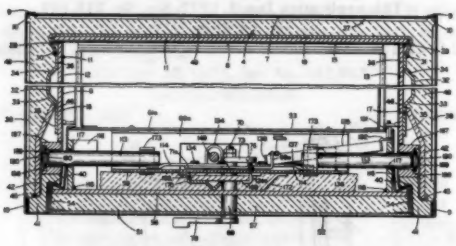


A cargo transporting device which comprises a platform and frame assembly having at longitudinally opposite ends bulkheads, which in an upright position relative to the base, permit the handling and transporting of cargo secured to the platform. In another adaptation the bulkheads are movable in a hinged relation outwardly from the opposite ends of the platform and then are slidable horizontally underneath the frame to provide a different configuration providing for the handling of another type of cargo.

3,735,714
ENTRY-RESISTANT SECURITY FILE CONSTRUCTION

James D. Shoop, Canton, Ohio, assignor to Diebold, Incorporated, Canton, Ohio

Filed July 15, 1971, Ser. No. 162,926
Int. Cl. E05b 65/46
U.S. Cl. 109—59 18 Claims

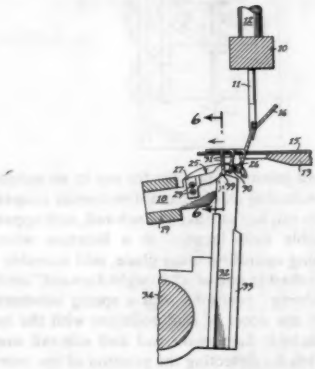


A security file having a cabinet open at the front with mullion means dividing the open front into a series of drawer receiving pigeonhole compartments. Spaced outer and inner shells form the cabinet, the inner shell including a duplex walled entry-resistant shell comprising an outer sheet of aluminum and an inner sheet of abrasive steel. Insulation material fills the space between the outer and inner shells where an insulated security file is desired. Drawers are slidably located in the pigeonholes and a gang-lock bolt mechanism which extends through the drawer fronts and mullion means is operated by a handle of the main locking mechanism. The gang-lock mechanism includes dual upper and lower bolts located at the corners of each drawer and tied together by tie straps. A bolt strap is rigidly connected at one end to each tie strap and pivotally connected at its other end to a rotatable cam plate. A plunger operated bolt is fixed to the lower tie strap in the upper or main locking drawer and operates a plunger in the next-adjacent mullion means. Each such plunger contacts the upper end of a gang-lock control rod, the lower end of which contacts the plunger in the next-lower mullion means. Horizontally disposed side bolts are pivotally connected by actuating arms to diametrically opposite points on a cam disc in each drawer front. Detents are provided which prevent locking of any drawer unless the same is fully closed, and release means is provided for releasing said detent means when the drawer is fully closed. An anti-wedge plate is provided in each drawer front and protective angles are welded thereto in positions to permit locking of the bolts in each drawer to pass therethrough. A protective cover is provided for a locking bar bolt which connects the lower tie strap in the main locking drawer with the cam plate. Protective device are provided to impede drilling of the ends of lock bolts and the lower ends of the lowermost control rod of the gang-lock. Protective devices and anti-wedge means are provided in various areas of the mechanism to impede access to or actuation of the mechanism if attacked by externally applied force.

3,735,715
APPARATUS FOR TUFTING UNIFORM CUT PILE

William Erby Passons, and William Rubin Reese, both of c/o Broad Street Machine Company Inc., P. O. Box 6568, Chattanooga, Tenn.

Filed Jan. 24, 1972, Ser. No. 220,048
Int. Cl. D05c 15/24
U.S. Cl. 112—79 R 5 Claims



A cut pile looper device including a looper element or hook and a spreader element fixed proximate to the bill of the hook for receiving a tufted loop thereover in a spread position for cutting by a knife member reciprocating between the spreader element and the hook so that the loop is cut in substantially the center to form cut pile yarn ends of equal height.

The looper device is characterized by a small recess formed in one side surface of the bill adjacent its free end, to freely receive the free end of the spreader element projecting laterally toward the bill and into the recess.

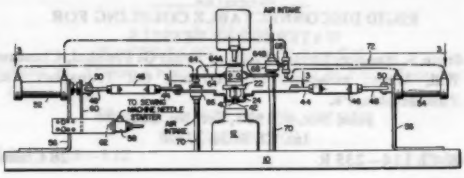
3,735,716
BUTTONHOLE OPENER

Wendell Wilkie, Jasper, Ga.

Filed May 25, 1972, Ser. No. 257,032
Int. Cl. D05b 3/14
U.S. Cl. 112—110 7 Claims

A buttonhole opener for button sewing machines, using air operation to automatically open a buttonhole in a garment to which a button is to be attached and thereby eliminate the necessity of pulling back of a garment pocket and the like

prior to tacking on of the button. A series of valves and air cylinders in operation automatically actuate the opener to



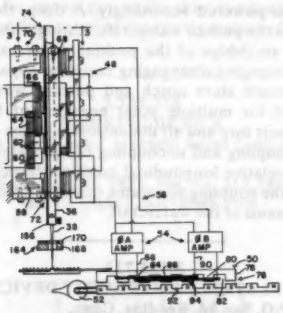
open the buttonhole when the button sewing machine is operated through a series of air switches.

3,735,717

ELECTROMAGNETIC DRIVE SYSTEM

Joe W. VonBrimer, deceased, late of Las Vegas, Nev.; C. M. Brimer, co-executor, 4345 N. Camino Cardenal, Tucson, Ariz.; Dr. Gehrs, co-executor, 5353 Balboa Blvd., Encino, Calif., and Angelo Rizzo, co-executor, 6052 Rod Ave., Woodland, Calif.

Filed Feb. 10, 1971, Ser. No. 114,233
Int. Cl. D05b *69/10*
U.S. Cl. 112—220 **8 Claims**



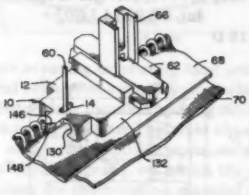
A drive system for controlling and synchronizing the movement of two or more relatively movable members, one of which is to be driven with any desired amplitude and at any desired rate, and one or more others of which have the movement thereof determined by the movement of the first member. One relatively movable member typically comprises a non-magnetic, electrically conductive armature, such as a reciprocating metal slide operating axially in the air gap between an electromagnetic stator containing plural distributed multiphase windings and a return piece for the flux paths thus generated. Another relatively movable element typically comprises a permanent magnet armature driven by an associated linear actuator also having multiphase windings distributed therein and adapted to create a field of the character indicated by a control signal emanating from a unit detecting the movement of the first movable member. In a described embodiment, the first element includes a carrier for a magnetic sender moving in relation to the coils in a magnetic detector, while the driven or second member includes an amplifier for the signal supplied to it by the detector. As embodied in a sewing machine, for example, the first member or driving element is in the form of a vertically movable slide carrying the needle, and the second or driven member is a horizontally movable armature serving as the bobbin carrier. The needle holder carries the magnet, pickup coils are located adjacent the movement path of the magnet, and the amplifier furnishes amplified pulses of a characteristic type to the windings distributed in the bobbin carrier so as to cause synchronized or slaved movement of the bobbin carrier. Means are typically provided for changing the voltage, current and polarity of the signal applied to the first element stator so as to permit varied movement characteristics to be imparted thereto.

3,735,718

PRESSER FOOT FOR SLIDE FASTENERS

Eugenia J. Vizgirda, New Hyde Park, N.Y., and William F. Van Amburg, Meadville, Pa., assignors to Textron Inc., Providence, R.I.

Filed June 23, 1971, Ser. No. 155,968
Int. Cl. D05b *29/00*
U.S. Cl. 112—235 **10 Claims**



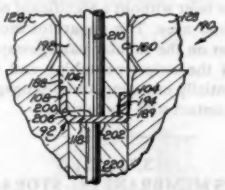
A slide fastener presser foot is conventionally attached to a sewing machine presser bar assembly for sewing a slide fastener to a material, such as a garment fabric. A pair of guide channels recessed in the presser foot receives a stringer of the slide fastener and a projection on the front of the presser foot guides the stringer into one of the guide channels.

3,735,719

WHEEL LUG

Otto V. Puzik, Willoughby, Ohio, assignor to Willow Hill Industries, Inc., Willoughby, Ohio

Filed May 13, 1971, Ser. No. 142,947
Int. Cl. B21d *53/20*
U.S. Cl. 113—116 H **15 Claims**



A method of making an improved wheel lug for use in securing a removable or demountable tire carrying rim to the hub of a wheel assembly includes the cold working of a circular flat metal blank to form a cup-shaped blank which is then cold worked to the configuration of the wheel lug. The flat metal blank or disc is first formed into a cup-shaped blank having a generally hemispherical configuration. A side portion of this hemispherical cup-shaped blank is cold worked to form four rectangular side panels. These side panels are integrally formed with each other to define an uninterrupted and joint free rectangular rim and side wall of the cup-shaped blank. The arcuate bottom of the cup-shaped blank is then cold worked to form a generally flat rectangular main or bottom panel. Finally, the rectangular side and bottom panels of the cup-shaped blank are cold worked to the configuration of the wheel lug. During this final cold working of the cup-shaped blank, one side panel is bowed outwardly at the same radius of

curvature as a clamp surface on the rim of the wheel assembly. In addition, the opposite side panel is bowed inwardly at the same radius of curvature as a clamp surface on the hub of the wheel assembly. The side panels of the finished wheel lug are integrally formed with each other without an interruption or joint between them to provide the wheel lug with sufficient strength to withstand relatively severe operating conditions.

3,735,720

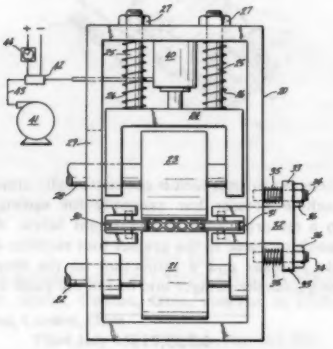
METHOD AND APPARATUS FOR DEFORMING A FLAT ON PARTS OF METAL STRIP-TYPE TUBING WHILE LEAVING OTHER PARTS UNDEFORMED

Lester J. Tranel, St. Louis, Mo., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 119,600, March 1, 1971. This application May 4, 1972, Ser. No. 250,250

Int. Cl. B21d *53/02*

U.S. Cl. 113—118 D **5 Claims**



A method and apparatus for forming metal strip-type tubing suitable for use in heat exchangers. Deforming flats are formed on parts of a first surface and an opposing surface of the tubular passageways in the strip-type tubing while other parts of the tubing are left undeformed. The deformed flats are adapted to be bonded to flat type fin stock for heat exchange applications. The undeformed areas of the tubing are adapted to be bent without a significant pressure drop occurring in the bend area. The apparatus includes means for deforming the flat on the tubular passageways while restraining the edges of the strip-type tubing and further includes means for sequentially engaging and disengaging the deforming means from contact with the tubing.

3,735,721

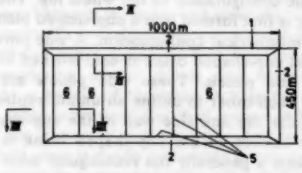
IMPERVIOUS MEMBRANE OIL STORAGE SYSTEM

Jacob Leguijt, Dordrecht, Netherlands, assignor to Mannesmann (Nederland) N.V., Dintelmond (Gem. Fignaart), Netherlands

Filed Mar. 25, 1971, Ser. No. 128,033

Int. Cl. B63b *35/00*

U.S. Cl. 114—0.5 T **10 Claims**



Storage system for oil in impervious membrane envelopes comprising a water basin with communicating compartments each for one container, the system being such that optimal fire protection is achieved with minimal dimensions.

3,735,722

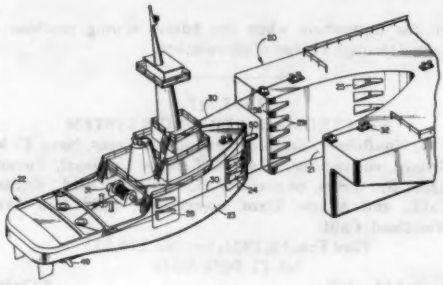
RIGID DISCONNECTABLE COUPLING FOR WATERBORNE VESSELS

Adrian S. Hooper, Devon, Pa., and Ernst G. Frankel, Chestnut Hill, Mass., assignors to Interstate Oil Transport Co., Philadelphia, Pa.

Filed Dec. 9, 1971, Ser. No. 206,434

Int. Cl. B63b *21/00*

U.S. Cl. 114—235 R **28 Claims**



A combination of a pushed watercraft with a pushing watercraft, which is powered accordingly. A deep, through-going stern notch on the pushed watercraft, mating with and extending to about amidships of the pushing watercraft. Multiple, short, quick engaging-disengaging coupling apparatus on the pushed watercraft stern notch and pushing watercraft bow end, arranged for multiple point engagement between the watercraft. Short fore and aft dimensioning of the coupling apparatus for coupling and uncoupling of the watercraft with a minimum of relative longitudinal motion. Vertically ordered pluralities of the coupling apparatus enabling different relative draft engagements of the watercraft.

3,735,723

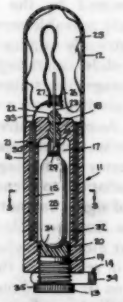
INFLATABLE EMERGENCY DEVICE

Pierre Lutz, P.O. Box 84, Redding, Conn.

Filed Sept. 18, 1972, Ser. No. 289,790

Int. Cl. G09f *9/00*

U.S. Cl. 116—124 B **10 Claims**



The helium cartridge is mounted within a recess of the casing while the spool of line is mounted within an annular recess about the cartridge chamber. The balloon is disposed within a removable cap mounted on the casing. A needle valve passes through a self-sealing nipple into the balloon as well as into the cartridge chamber. A threaded screw forces the cartridge

against the end of the needle valve to rupture the sealing disc therein and permit helium to enter into the balloon after the cap has bwen removed. The balloon is anchored by a line extending from the casing.

3,735,724

WATER SKIER SAFETY ALARM

Nathan W. Miller, Chino, Calif., assignor to Flag-Matic Inc., Chino, Calif.

Filed Oct. 2, 1972, Ser. No. 294,374
Int. Cl. G08c 5/00
U.S. Cl. 116—132 7 Claims

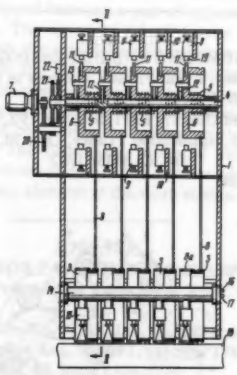
A safety alarm flag is mounted to a ski towboat so that, when a skier towed by a boat has fallen, the flag is automatically raised to be visible by operators of other boats in the vicinity and also by the operator of the boat that had been towing the downed skier. A flag-carrying arm is pivotally mounted to the ski towboard and spring-urged to upright alarm position. A tension line is connected to the flag arm above its pivot and guided downwardly and rearwardly along the boat rail for connection to the skier towline. Fluid damping is provided for control of the raising motion of the flag-carrying arm.

3,735,725

MARKING DEVICE

Efim Lvovich Petrikovsky, prospekt imeni Lenina, 45, kv. 34, Chelyabinsk, U.S.S.R.

Filed Dec. 23, 1971, Ser. No. 211,258
Int. Cl. B05c 11/00; B05b 7/06
U.S. Cl. 118—7 2 Claims



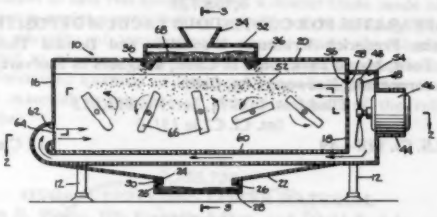
The specific feature of the device lies in that its driving discs linked kinematically with the marking drums are installed on a reversibly-rotatable shaft with the aid of springs and each disc is provided with a system of retainers whose number and position correspond to the number and position of the marking signs, each disc carrying a stop which can interact with the retainer; this ensures rapid and simultaneous remote changing of the position of the marking drums; besides, the device incorporates a system of drive links installed on the shaft, and stops located on the discs; these drive links and stops allow the marking drums to be returned rapidly and remotely to the initial position.

3,735,726

AUTOMATIC BREADING MACHINE

William Butler, 954 Hoe Avenue, New York, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,636
Int. Cl. A23g 3/20
U.S. Cl. 118—24 4 Claims



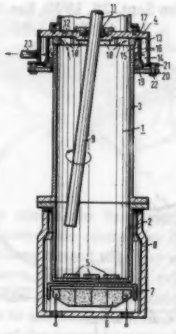
A machine for breading or coating food articles with comminuted material prior to baking or frying, which comprises a transparent, substantially rounded housing divided into a main chamber and blower chamber. The main chamber has a plurality of pairs of spaced opposing spits, rotatably attached medially to the chamber walls, on which the articles are affixed, and a hopper for the breading material disposed above the chamber to discharge the material into the chamber in several directions. A fan blower is disposed at one end of the chamber to creat air currents therethrough at one level and a connecting duct opening into the other end of the chamber at a different level to create air currents in the chamber from the opposite direction, causing the discharging breading material to impinge against and adhere to the surfaces of the food articles as they are caused to rotate. A crumb tray at the bottom of the chamber receives the excess breading material. As a modification fan blowers are provided at each end of the chamber.

3,735,727

DEVICE FOR THE PRECIPITATION OF LAYERS OF SEMICONDUCTOR MATERIAL

Erhard Sussmann, Poing, Germany, assignor to Siemens Aktiengesellschaft Munich, Berlin, Erlangen, Germany

Filed Oct. 29, 1971, Ser. No. 193,743
Claims priority, application Germany, Nov. 5, 1970, P 20 54 538.4
Int. Cl. C23c 13/08
U.S. Cl. 118—48 18 Claims



Epitaxial device in which semiconductor wafers to be coated are disposed at the bottom of a vertical cylindrical reaction vessel and are heated to the high temperature required for precipitation by a heat source arranged underneath the bottom. Fresh reaction gas is fed to the heated semiconductor wafers from above and the spent gas is

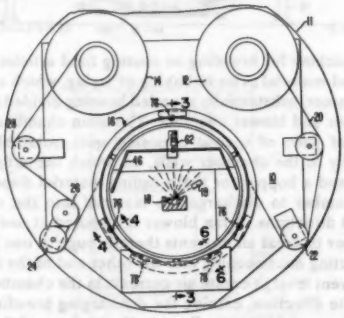
removed again upwards through holes arranged along an annular zone in the wall of the reaction vessel. The spent gas then passes to two exhaust chambers connected in series. The flow resistance of the gas discharge being essentially determined by the flow resistance between the two exhaust chambers.

3,735,728

APPARATUS FOR CONTINUOUS VACUUM DEPOSITION

John Frederick Krumme, Woodside, and Donald Thomas Ford, Menlo Park, both of Calif., assignors to Andvari, Incorporated, Redwood City, Calif.

Filed Dec. 1, 1971, Ser. No. 203,813
Int. Cl. C23c 13/10
U.S. Cl. 118—49 11 Claims



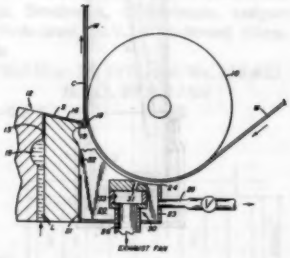
A vapor deposition apparatus is provided wherein a workpiece strip is passed over a rotatable masking wheel within a vacuum environment. The evaporation source and material to be evaporated and deposited upon the strip is located within the perimeter of the masking wheel. It is deposited upon the strip as it passes along the masking wheel. The masking wheel consists of two or more parallel, and independently mounted rings which are axially aligned and axially adjustable for altering the gap between the rings, and hence the width(s) of the material deposited on the workpiece strip.

3,735,729

APPARATUS FOR COATING A CONTINUOUS WEB

Martin George Bird, Northwood, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 749,109, July 31, 1968, abandoned. This application Sept. 24, 1970, Ser. No. 75,245
Int. Cl. B05c 5/02
U.S. Cl. 118—50 8 Claims



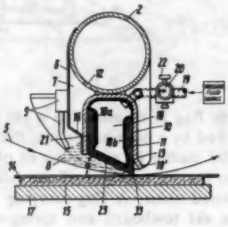
An apparatus for applying fluid materials to a moving strip of material to be coated wherein a stream of coating liquid is maintained in bridging relation between a hopper and a surface of the strip moved in spaced relation relative to the hopper and a differential pressure is maintained on opposite sides of the stream of coating liquid. The apparatus includes the improvement of separate means for vacuuming the surface of the strip just ahead of the stream to remove the laminar layer of air carried along by the strip.

3,735,730

APPARATUS FOR APPLYING A FLOWABLE MEDIUM TO A CARRIER

Matthias Mitter, Senne, Germany, assignor to Mitter & Co., Schloss Holte, Germany

Filed Dec. 21, 1970, Ser. No. 99,771
Claims priority, application Germany, Dec. 22, 1969, P 19 64 182.8
Int. Cl. B05c 1/00; B41j 13/00; B41f 15/42
U.S. Cl. 118—205 20 Claims



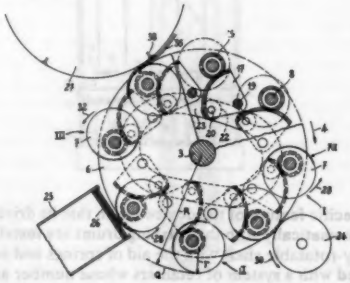
A flowable medium is to be supplied to an exposed surface of a carrier, for instance a web which is to be printed. A supply arrangement supplies the flowable medium to the vicinity of the exposed surface and an applicator arrangement is provided for applying it to the exposed surface. The applicator includes a hollow spreading element of elastically distendable material which engages either the exposed surface directly, or engages a portion of the applicator arrangement which is operatively associated with the exposed surface, and admitting means is provided for admitting requisite quantities of pressurized fluid to the interior of the hollow spreading element whereby to distend the latter to various extents and thus vary its engaging pressure.

3,735,731

LABEL GUMMING AND DISPENSING DEVICE

Georges Tavernier, Lyon, France, assignor to Societe Nouvelle Baele-Gangloff, Villeurbanne, France

Filed Oct. 27, 1971, Ser. No. 192,967
Claims priority, application France, Oct. 30, 1970, 7039895
Int. Cl. B05c 1/02
U.S. Cl. 118—220 2 Claims



This device for gumming and dispensing labels comprises a rotary support carrying label-pick-up members, and adapted to cause said pick-up members to register in succession with a gumming cylinder, a fixed magazine containing the labels to be gummed, and a drum adapted to transfer these labels to the articles to be labelled, wherein said label pick-up members consist of cylinders or cylinder portions having a radius con-

siderably smaller than that of the path described by their outermost generatrix during the rotation of said support, the axis of rotation of said cylinders or cylinder portions being off-set in relation to their longitudinal axis by a value determined to permit the rolling of said pick-up member on the gumming cylinder and on the first label of said magazine without slipping, said pick-up members being connected to means adapted to impart thereto a pivotal movement in either direction in relation to their rotary support, as they move past the different peripheral stations for gumming, picking-up and transferring said labels. (FIG. 1).

3,735,732

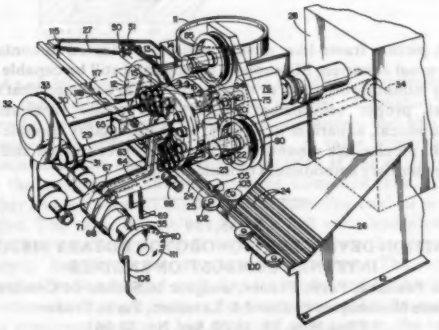
COATING APPARATUS

Theodore H. Van Der Schoot, Deering, N.H., assignor to GTE Sylvania Incorporated, New York, N.Y.

Filed Feb. 23, 1971, Ser. No. 117,959

Int. Cl. B05c *1/02*

U.S. Cl. 118—230 **18 Claims**



Apparatus for applying liquid material to the edges of a die of semiconductor material mounted between two conductive plugs. The plugs and intervening die constitute a semiconductor element which is fed from a vibratory feeder to a transfer wheel and then gripped between a pair of opposed spindles of a conveyor wheel. The conveyor wheel carries the semiconductor element with the spindles rotating into a work station. At the work station the edges of the rotating semiconductor die come into contact with continuously moving filamentary material which passes through a vessel containing liquid coating material before contacting the semiconductor element at the work station. The filamentary material picks up liquid material from the vessel and transfers it to the edges of the die of the semiconductor element at the work station.

3,735,733

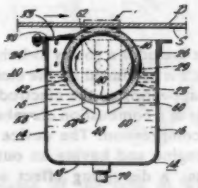
APPLICATOR FOR PAPER HANDLING APPARATUS

Edward V. Henc, Promisedale Farm, Boot Road, R.D. 2, Malvern, Pa.

Continuation of Ser. No. 3,283, Jan. 16, 1970, abandoned. This application Aug. 9, 1971, Ser. No. 170,068

Int. Cl. B05c *1/08, 1/16*

U.S. Cl. 118—261 **10 Claims**



An applicator assembly for applying a liquid substance to at least one face of sheet material moving along a predetermined path comprising a housing defining a reservoir for the liquid substance, means for maintaining a predetermined level of the liquid substance in the reservoir, a roll member having at least one circumferentially extending pad mounted on its outer surface, means for rotatably mounting the roll member in said housing comprising vertical trackways in opposed end walls of said housing which in the operative position limit lateral movement of said roll assembly, and a doctor blade made of resilient material mounted along one edge of the housing having a plurality of longitudinally spaced openings therein adapted to engage and wipe said pads whereby a uniform predetermined quantity of liquid substance is applied to the sheet material irrespective of rotational speed of the roll member.

3,735,734

ODOR SUPPRESSING LITTER MATERIAL

Albert R. Pierce, III, Franklin Lakes, and David Rodriguez, Fort Lee, both of N.J., assignors to Thomas J. Lipton Inc., Englewood Cliffs, N.J.

Filed Dec. 15, 1970, Ser. No. 98,474

Int. Cl. A01k *29/00, 1/00*

U.S. Cl. 119—1 **4 Claims**

An odor suppressing litter material for domestic animals is an admixture of an absorbent soil and an odor inhibiting additive. The soil is clay or diatomaceous earth and may be a form of clay known as Fuller's earth. The deodorizing additive is chlorophyl, sodium dihydrogen phosphate, potassium dihydrogen phosphate, potassium acid phthalate, or a combination of these. The deodorizing additive content is between 0.01 and 10.0 percent by weight of the admixture.

3,735,735

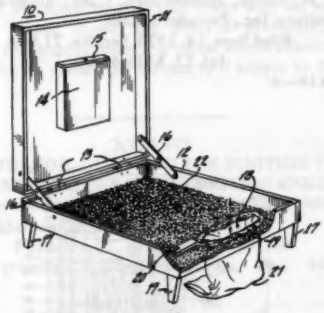
PORTABLE COMMODE FOR PETS EMPLOYING REMOVEABLE MAINTENANCE

George Norolan, Brooklyn, N.Y., assignor to Michael Etkin, Howard Beach, Queens, N.Y., a part interest

Filed Apr. 14, 1971, Ser. No. 133,986

Int. Cl. A01k *67/00*

U.S. Cl. 119—1 **9 Claims**



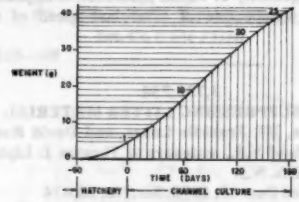
There is disclosed a commode for animals particularly adapted for dogs. The commode comprises first and second rectangular box-like sections hinged together at one end. In an open position, the sections are positioned relatively perpendicular with respect to one another. The second section has legs on a bottom surface to permit the commode to rest above a floor. The top surface of the second section has an aperture thereon. In cooperation with the aperture is a bag holding apparatus which is positioned about the aperture, permitting a plastic or other type bag coacting therewith to rest between the space formed by the bottom surface of the second section and the floor. Animal droppings and so can easily be swept or raked into the aperture and hence confined within the plastic bag. The bag holding apparatus can then be easily removed, the bag and contents discarded and a new bag inserted.

3,735,736

METHOD FOR GROWING EDIBLE AQUATIC ANIMALS ON A LARGE SCALE

William C. Yee, Oak Ridge, Tenn., and Perry R. Stout, Davis, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Feb. 8, 1971, Ser. No. 113,534
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 8 Claims



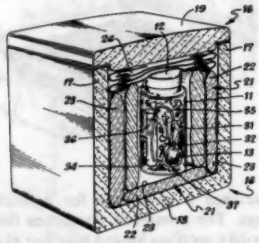
A continuous and large-scale method for growing batches of shrimp or other aquatic animal from an initial average unit weight to a desired average unit weight. As exemplified by the growing of shrimp, each batch of shrimp is grown to increasingly larger unit weights by sequential transfer through a series of continuous-flow, above-ambient-temperature ponds of increasingly larger batch dwell volume. The ponds are fed by a stream of water which is at above-ambient temperature by virtue of being derived at least in part from effluent water coolant from an industrial facility. A batch of shrimp to be grown is transferred into each of the ponds for approximately equal growth periods. In a preferred form of the method, the dwell volumes of the ponds are sized so that approximately the same animal weight density prevails in each pond at the end of the growth period associated with that pond.

3,735,737

METHOD AND PACKAGE FOR STORING AND SHIPPING OYSTER LARVAE

William W. Budge, Hillsborough, Calif., assignor to Pacific Mariculture, Inc., Pescadero, Calif.

Filed Sept. 14, 1970, Ser. No. 71,944
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 9 Claims



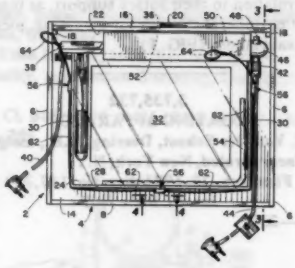
Method and package for storing marine larvae, such as oyster larvae, by taking marine larvae at or near the state of metamorphosis and reducing the marine larvae to a temperature substantially below the larval growing temperature to avert metamorphosis for a period of time, and thereafter raising the temperature of the marine larvae to cause metamorphosis to commence.

3,735,738

WALL MOUNTABLE AQUARIUM

John K. Lake, 15353 Weddington St., Van Nuys, Calif.

Continuation-in-part of Ser. No. 88,002, Nov. 9, 1970, abandoned. This application Aug. 4, 1971, Ser. No. 168,860
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 16 Claims



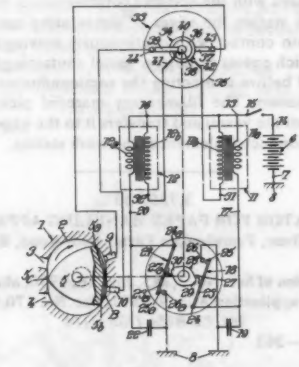
A picture frame-like, novelty aquarium adapted to contain the usual aquarium life-support systems and still be capable of easy mounting on a wall or the like surface in a manner that insures proper securement thereof. An easily fabricated, economical, aquarium of unique, aesthetic quality capable of flush, picture-like mounting on a wall or other surface and in an exemplary embodiment of molded plastic.

3,735,739

IGNITION DEVICE FOR MONOROTOR ROTARY PISTON INTERNAL COMBUSTION ENGINES

Jean Panhard, Paris, France, assignor to Societe de Constructions Mecaniques Panhard & Lavasson, Paris, France

Filed Mar. 18, 1970, Ser. No. 20,661
Claims priority, application France, Mar. 18, 1969, 6907680
Int. Cl. F02p *3/02*
U.S. Cl. 123—8.09 10 Claims

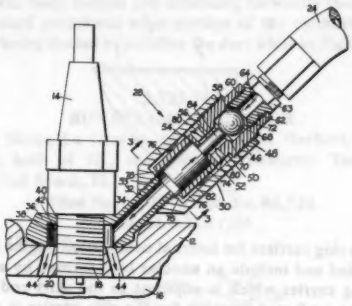


The ignition device includes a rotary switch for preventing the voltage peak which is produced on the closing or opening of the breaker from appearing at the electrodes of the spark plug when the latter is in a combustion chamber of the engine at the beginning of compression. The device may include a cam driven by the engine and having an outline of sudden slope. The device has a disrupting effect sensitive to the direction of flow of the current in the secondary of the ignition coil.

3,735,740
AIR INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

John H. Hunt, 8030 S.E. Barbara Welch, Portland, Oreg.

Filed Apr. 20, 1971, Ser. No. 135,709
Int. Cl. F02b 41/00
U.S. Cl. 123—26 2 Claims

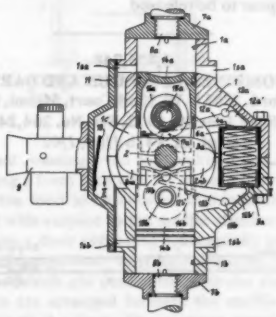


An air injection system arranged to admit air under pressure into the combustion chamber of an internal combustion engine for reducing waste products of combustion and also increasing the efficiency of the engine. A valve assembly is mounted on the engine for communication at one of its ends to the combustion chamber and for communication at its other end to a pressure supply line for admitting cold air to the valve. The valve assembly includes a ball valve and plunger which automatically control the flow of air from the pressure supply line into the combustion chamber. The valve mechanism is arranged such that air is admitted to the combustion chamber precisely as the piston approaches the end of the compression stroke. In a preferred arrangement, the valve housing has a base by means of which such housing is clamped in place by the existing spark plug, with ports being bored adjacent to the spark plug for directing the air into the combustion chamber.

3,735,741
PISTON ENGINE

Ernst Hatz, Alte, Germany, assignor to Motorenfabrik Hartz KG., Ruhstorf, Germany

Filed Aug. 16, 1971, Ser. No. 172,056
Claims priority, application Germany, Aug. 27, 1970, P 20 42 632.8
Int. Cl. F02b 75/24
U.S. Cl. 123—56 C 7 Claims

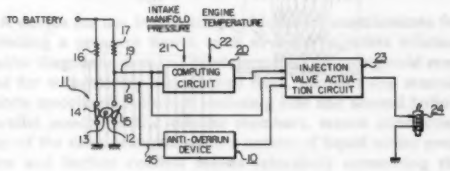


A piston engine of the type in which opposed pistons drivingly engage a shaft between the pistons by engagement with cam parts fixed on the shaft. A return spring compressible in a direction parallel to the axis of the pistons is spaced laterally from this axis. Pivotally mounted levers engage the spring ends and the pistons to urge the latter against the cam parts. Cups may cover the spring ends, the outside of these cups facing a common scavenging chamber such that inward and outward movement of the cups under the action of the springs and the levers pump air into and out of this scavenging chamber.

3,735,742
ENGINE OVERRUN PREVENTING DEVICE FOR INTERNAL COMBUSTION ENGINE

Shigeo Aono, and Shyuya Nambu, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 22, 1970, Ser. No. 82,947
Claims priority, application Japan, Oct. 22, 1969, 44/84431
Int. Cl. F02d 11/10
U.S. Cl. 123—102 3 Claims

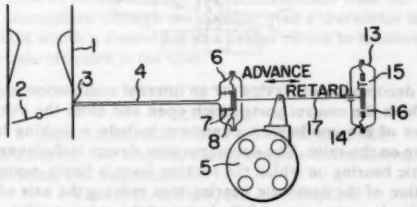


An engine overrun preventing device adapted to shut off or reduce the fuel supply to the engine cylinders so as to cause engine speed to decrease when "the maximum permissible engine speed" over which the engine tends to overrun has been reached. When applied to a fuel injection system, the overrun preventing device receives a signal indicating engine speed from an engine driven triggering device to generate a fuel shutoff signal when the maximum permissible engine speed has been reached. The fuel shut-off signal is supplied to an injection valve actuation circuit so as to render it ineffective thus preventing the engine from overrunning. When engine speed decreases to a predetermined value lower than the maximum permissible engine speed, the overrun preventing device generates a fuel supply restarting signal which causes the fuel supply system to restart the normal fuel supply to the cylinders.

3,735,743
APPARATUS FOR ADJUSTING THE IGNITION TIMING FOR USE IN INTERNAL COMBUSTION ENGINES

Takeo Shimizu, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1970, Ser. No. 99,740
Claims priority, application Japan, Dec. 24, 1969, 44/103421
Int. Cl. F02p 5/04
U.S. Cl. 123—117 A 1 Claim



An apparatus for adjusting the ignition timing for use in internal combustion engines having a conventional vacuum igni-

tion advancer, the apparatus retarding or slowing down the action of said vacuum ignition advancer upon the occurrence of the negative pressure at the throttle valve of the carburetor, thereby giving hysteresis loop characteristics in the negative pressure-ignition timing relation.

3,735,744

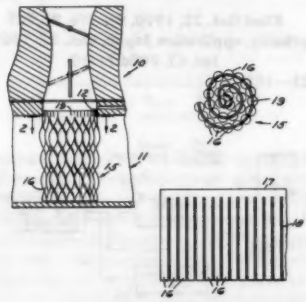
INTAKE MANIFOLD FUEL SYSTEM

Peter E. Brody, 224 California Avenue, and Otto H. Brody, 559 Askin Boulevard, both of Windsor, Ontario, Canada

Continuation of Ser. No. 858,730, Sept. 17, 1969. This application July 18, 1971, Ser. No. 163,499

Int. Cl. F02m *29/04, 29/14*

U.S. Cl. 123—141 **9 Claims**



A fuel system for internal combustion engines comprising a manifold having an inlet passage for a fuel mixture and a plurality of outlet passages to the cylinders of the engine. A fuel mixture distributing device is provided adjacent the inlet passage and comprises a plurality of closely packed sinuous members defining a plurality of generally axially extending twisted passages which are laterally intercommunicating.

3,735,745

DECOMPRESSION DEVICE FOR INTERNAL COMBUSTION ENGINES

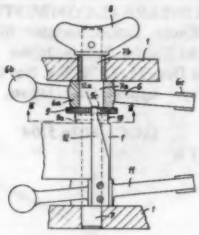
Ernst Hatz, Ruhstorf, Germany, assignor to Motorenfabrik Hartz KG., Germany

Filed Mar. 29, 1971, Ser. No. 128,942

Claims priority, application Germany, Apr. 23, 1970, P 20 19 755.1

Int. Cl. F01l *13/08*

U.S. Cl. 123—182 **5 Claims**



A decompression device for an internal combustion engine in which the control parts which open and close the exhaust valves of the combustion chambers include a rocking lever acting on the valve. The decompression device includes an eccentric bearing on which the rocking lever is freely mounted, rotation of the eccentric bearing thus moving the axis of the rocking lever to prevent full closing of the exhaust valve, that is, provide decompression of the chamber. The eccentric bearing may be turned to reference position at which it permits full closing of the exhaust valve by either manual or automatic means.

3,735,746

RING CARRIER FOR LIGHT ALLOY PISTONS

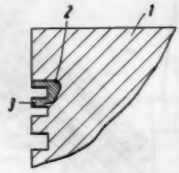
Gerhard Schieber, Bad Wimpfen, Germany, assignor to Karl Schmidt GmbH, Neckarsulm, Germany

Filed Jan. 14, 1971, Ser. No. 106,467

Claims priority, application Germany, Feb. 7, 1970, P 20 05 662.6

Int. Cl. F02f *5/00*; F16j *9/22*

U.S. Cl. 123—193 P **1 Claim**



Ferrous ring carriers for internal combustion engine pistons are provided and include an annular land formed by a flange of the ring carrier which is adjacent to the skirt end of the piston. The preferred location for the ring carrier is nearest the head of the piston.

3,735,747

UNDERWATER COMPRESSED-GAS GUN

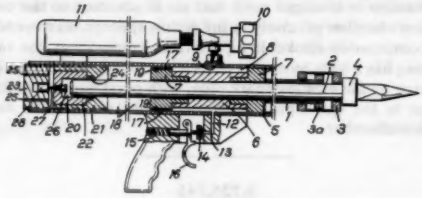
Jean Barjavel, 70 Avenue Gernuschi, Nice, France

Filed July 22, 1970, Ser. No. 57,184

Claims priority, application France, July 25, 1969, 6925375

Int. Cl. F41b *11/08*

U.S. Cl. 124—11 A **6 Claims**



Compressed-gas gun for projecting a spear under water, consisting of a compressed-air tank and a gun body formed of two tubes assembled end to end, one located at the front which constitutes the barrel and the other which contains an elastic sleeve serving as impervious joint between a compressed-gas reserve chamber and the barrel. The elastic sleeve and body define a further chamber which is cooperative with a trigger to selectively release the spear. Pressure on the spear by the elastic sleeve holds the spear tight before firing, but deformation of the sleeve away from the spear during firing permits the spear to be released.

3,735,748

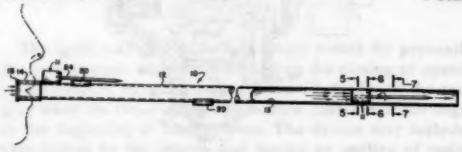
COMBINED BLOW GUN AND DARTS

Paul E. Gaylord, 2504 N.W. 22nd Court, Miami, Fla.

Filed June 19, 1972, Ser. No. 264,245

Int. Cl. F41b *1/00, 1/02*

U.S. Cl. 124—12 **4 Claims**



A combined blow gun and darts wherein the blow gun includes a substantially elongated tubular member, a

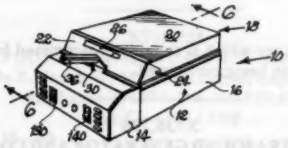
mouthpiece mounted on the end of the tubular member, a plurality of magnets secured to the tubular member in proximity of the mouthpiece and a plurality of darts held in position on the gun by the magnets, and wherein each of the darts consists of a cylindrical body section whose diameter is substantially slightly smaller than the inner diameter of the tubular member for free sliding movement of the dart through the tubular member, a pointed metallic rod mounted at the axis of the cylindrical body section and extending forwardly thereof, and the forward peripheral edge portion of the cylindrical body section being slotted to stabilize the dart while in flight.

3,735,749

BUN STEAMER INJECTOR

Chester Binks, La Grange, and Ronald M. Herbert, Hanover Park, both of Ill., assignors to Restaurant Technology, Inc., Oak Brook, Ill.

Filed Nov. 4, 1970, Ser. No. 86,721
Int. Cl. A21b *1/36*
U.S. Cl. 126—20 8 Claims



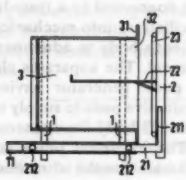
A method and apparatus for injecting steam into buns. The stem injector includes a readily removable platen assembly which assembly defines a plurality of equally spaced steam injection orifices arranged in rows and columns. The platen assembly is specially configured to produce high quality steam. The buns are positioned on a perforated tray, the perforations of which coincide with the steam injection orifices. The steam is injected directly into the buns themselves through the perforations in the tray.

3,735,750

BAKING AND ROASTING OVEN

Heinrich Detterbeck; Josef Ackermann, and Bruno Schmalzgruber, all of Traunreut, Germany, assignors to Siemens-Electrogerate GmbH, Berlin, Germany

Filed Feb. 16, 1971, Ser. No. 115,195
Claims priority, application Germany, Feb. 13, 1970, P 20 06 621.1
Int. Cl. F24c *15/02*
U.S. Cl. 126—197 22 Claims



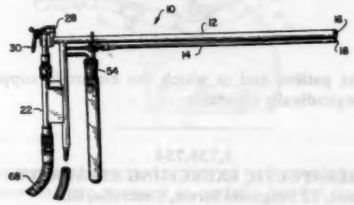
A baking and roasting oven for cooking food has a muffle structure having a front face which defines a charging opening for receiving the food to be cooked. Guide members are fixedly mounted with respect to the muffle structure and a door assembly having a door extending substantially parallel to the front face is also provided. The door assembly includes carriage members which are connected with the door. The carriage members are arranged beneath the muffle structure in spaced relation to the door. The carriage members movably engage the guide members and so facilitate the movement of the door between open and closed positions. A locking mechanism is disposed with respect to the guide and carriage members for locking the door when the door is in the closed position.

3,735,751

LAVAGE AND CYTOLOGY INSTRUMENT

Seymour Katz, 444 East 68th Street, New York, N.Y.

Filed June 8, 1971, Ser. No. 151,058
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 F 4 Claims



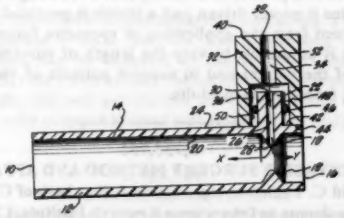
A device for use in proctosigmoidoscopic examinations for directing a pressure liquid, such as water, a saline solution and/or diagnostic dyes to a predetermined proctosigmoid zone and for withdrawing the injected fluid, feculent and mucoid debris associated therewith including first and second hollow parallel nonconcentric tubular members, means connecting one of the tubular members to a source of liquid under pressure and further conduit means selectively connecting the other of the hollow tubular members to a source of reduced pressure and/or a collector maintained at a reduced pressure. The withdrawing function and/or spraying may be continuous or intermittent.

3,735,752

SPIROMETER

Jerome A. Rodder, 774 Sunshine Drive, Los Altos, Calif.

Continuation-in-part of Ser. No. 809,847, March 24, 1969, abandoned. This application Apr. 7, 1971, Ser. No. 131,920
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 23 Claims



A spirometer for measuring the flow rate of breath inhaled and exhaled through a disposable venturi tube includes a lateral conduit which communicates with the venturi tube. The flow of breath through the tube aspirates fresh air from the atmosphere through the conduit over a thermistor in the conduit which is connected to a bridge circuit to measure the flow rate of breath in the tube.

3,735,753

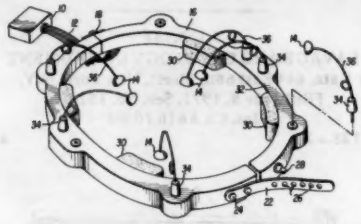
HEAD HARNESS FOR EEG ELECTRODES

Lech Pisarski, Los Angeles, Calif., assignor to Humetrics Corporation, Los Angeles, Calif.

Filed Nov. 9, 1971, Ser. No. 196,924
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.1 E 7 Claims

An EEG head harness for rapidly and automatically locating a plurality of EEG electrodes on the head of a patient in which

the electrodes are removable and are spring biased toward the



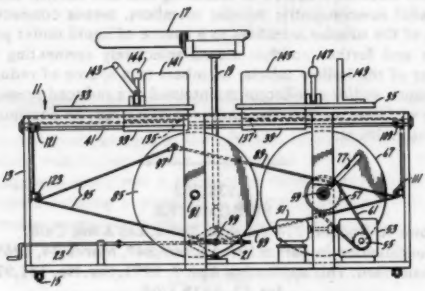
head of the patient and in which the electrode supporting frame is longitudinally separable.

3,735,754

THERAPEUTIC EXERCISING APPARATUS

John M. Reed, 12 Magnolia Street, Centralia, Ill.

Filed June 11, 1971, Ser. No. 152,045
Int. Cl. A61h 1/02
U.S. Cl. 128—25 R 9 Claims



An exercising apparatus for therapeutic use which moves the limbs of a patient in a cross-pattern crawling motion. The apparatus is power driven and a clutch is provided to protect the patient from the application of excessive forces. The apparatus is adjustable to vary the length of movement of the limbs of the patient and to support patients of varying sizes ranging from infants to adults.

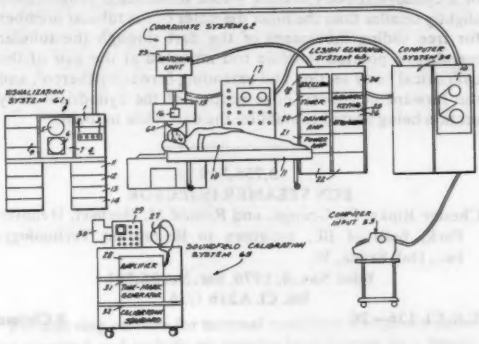
3,735,755

NONINVASIVE SURGERY METHOD AND APPARATUS

Reginald C. Eggleton, and Francis J. Fry, both of Champaign, Ill., assignors to Interscience Research Institute, Champaign, Ill.

Filed June 28, 1971, Ser. No. 157,160
Int. Cl. A61h 29/00
U.S. Cl. 128—24 A 8 Claims

A method and apparatus for performing human and animal surgery in which the tissue field including all soft tissue fluid space interfaces can be visualized along with other soft tissue features by appropriate ultrasonic visualization means such as transmitting a scanning ultrasonic beam and receiving echoes from the desired areas and presenting a picture of said areas on a suitable display monitor such as a cathode ray tube for two-dimensional presentation where the presentation may be compared with standard atlases of normal tissue. Means and apparatus for transmitting ultrasonic energy at substantially higher level than that used for visualizing the area are provided so as to selectively destroy tissue without requiring a surgical incision. The extent of the surgery may be observed with the visualizing apparatus and the surgery may be performed and monitored by the visualizing apparatus. The visualizing and the tissue destructing means are under the control of a computer which is suitably programmed for the particular operation being performed.

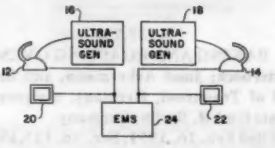


3,735,756

DUPLEX ULTRASOUND GENERATOR AND COMBINED ELECTRICAL MUSCLE STIMULATOR

Joseph M. Richards, and Mark E. DeGroff, both of Tulsa, Okla., assignors to Medco Products Co., Inc., Tulsa, Okla.

Filed June 23, 1971, Ser. No. 155,823
Int. Cl. A61m 1/26
U.S. Cl. 128—24 A 13 Claims



A duplex electro-ultrasonic medical therapy apparatus comprising a pair of ultrasound generators connected to a common power source and keyed by a duplex keyer circuit, the output of which is connected to a transducer which converts the electrical oscillations into mechanical vibrations for application to the patient's body to administer the ultrasonic medical therapy treatment. The apparatus also comprises an integrated electrical pulse generator having outputs connected to a pair of conductive pads to supply electrical muscle stimulation to the patient's body simultaneously with the ultrasound treatment. The electrical pulse generator further serves as a driving function for the ultrasound duplex keyer circuit.

3,735,757

HAND HELD VIBRATOR WITH FLEXIBLE DRIVE SHAFT

Charles H. MacFarland, Cleveland, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Filed June 19, 1970, Ser. No. 47,662
Int. Cl. A61h 1/00
U.S. Cl. 128—36 8 Claims

A vibrator is disclosed which includes a flexible drive shaft and a connector at one end of the drive shaft for manually connecting and disconnecting the one end to a vacuum cleaner power source for rotating the drive shaft. An eccentric

weight is releasably attached to the other end of the drive shaft for vibrating a handle. A first stop member is secured to the other end of the drive shaft, and a second stop member is secured to the handle for engaging the first stop member and preventing rotational movement of the drive shaft to permit

manual removal of the eccentric weight. A cover is releasably secured to the handle to cover the eccentric weight by an annular groove on the cover extending through 360° and an annular lip on the handle extending through slightly more than 180°. The handle encapsulates the other end of the drive shaft to prevent abrupt bending thereof.

3,735,758

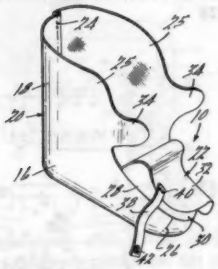
FOOT AND ANKLE CAST ENCLOSURE

Marguerite E. Novotney, 1626 W. Oregon, Lapeer, Mich.

Filed June 7, 1971, Ser. No. 150,418

Int. Cl. A61f *13/00*

U.S. Cl. 128—82 **2 Claims**



A removable protective enclosure for an ankle cast or the like, the enclosure comprising a boot-like portion adapted to removably receive a person's foot and being sufficiently large to accommodate and permit effortless insertion and removal of the foot when the same has been fitted with a foot or ankle cast, the boot-like portion being adapted to substantially enclose the foot and cast fitted thereon and including an upwardly extending ankle enclosing portion cooperable with the boot-like portion to protect the person's foot and ankle cast thereon from foreign material, moisture, inclement weather conditions and the like.

3,735,759

PROTECTIVE COVER FOR PLASTER CAST

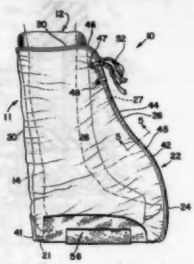
John Dennis MacKay, 34 Summitcrest Drive, Weston, Ontario, Canada

Filed May 5, 1971, Ser. No. 140,377

Int. Cl. A61f *5/00*; A41b *11/00*; A43b *3/18*

U.S. Cl. 128—82 **6 Claims**

A flexible waterproof plastic cover comprises an open-topped sleeve intended to be used over a plaster cast on a person's foot and ankle. The sleeve is formed from two edge-interconnected plies of flexible waterproof material. The plies are interconnected along rear and bottom edges as well as along a front edge which is formed in two sections. The first section of the front edge of the sleeve extends generally perpendicularly upwardly from the bottom edge for a distance equal to at least about half the length of the bottom edge and the second section extends obliquely upwardly and rearwardly toward the rearward edge so that the size of the largest foot cast which can be inserted into the sleeve is primarily determined by the minimum separation between its rear edge and



the top end of the second section of its front edge. A panel of abrasion-resisting material is usefully bonded to the cover along its bottom edge effectively to provide a ground-engaging sole.

3,735,760

NEEDLE APPARATUS

Walling D. Vreeland, Jr., 3910 Country Club Road, Winston-Salem, N.C.

Filed Jan. 20, 1971, Ser. No. 108,116

Int. Cl. A61m *5/00*

U.S. Cl. 128—216 **5 Claims**

A finger controlled needle apparatus containing a housing which supports a fluid reservoir and connecting ejecting means which can be actuated by movement of the user's finger. A flexible cover retains the various components on the finger of the user and permits the injection of fluids into the wall of a cavity or organ located within the human body.

3,735,761

HYPODERMIC DEVICES

Alfred A. Hurschman, Streetsboro, and Thomas P. Schiller, Pepper Pike, both of Ohio, assignors to Ampoules Inc., Macedonia, Ohio

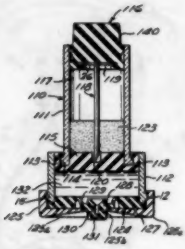
Filed Feb. 11, 1971, Ser. No. 114,493

Int. Cl. A61m *5/00*; A61j *1/00*

U.S. Cl. 128—218 M **5 Claims**

Hypodermic ampoules of the contained-needle type, a method of assembling and filing such ampoules, and combinations of such ampoules with so-called "applicators" for actuating the ampoules to make injections are disclosed. Each of several ampoule forms has a plurality of cylindrical, medicament-containing chambers and a plunger closing one end of one of the chambers. A hollow needle is fixed to the plunger and is initially contained within such a chamber. The other end of the ampoule is sealed by a diaphragm which is pressed against a beaded end portion of a cylinder and is sealed thereto by a cup-shaped clip which snaps over the beaded end portion to thereby compress the diaphragm against the end

portion. The clip has a peripheral rim about a recessed bottom end which stretches the patient's skin to facilitate the injection. According to the invention, the ampoule includes multi-



ple chambers for premixing a medicament with at least one other medicament and dispensing the mixture by, for example, injecting it either subcutaneously or intramuscularly.

3,735,762

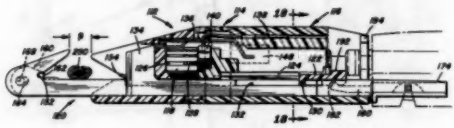
INSTRUMENT FOR LIGATING SUTURING AND DIVIDING ORGANIC TUBULAR STRUCTURES

Graham W. Bryan, Ridgefield, and David T. Green, Norwalk, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.

Division of Ser. No. 32,247, April 27, 1970, Pat. No. 3,675,688. This application Dec. 29, 1971, Ser. No. 213,574

Int. Cl. A61b *17/12, 17/32*; B21f *15/00*

U.S. Cl. 128—305 **7 Claims**



A medical instrument and associated cartridge for ligating an organic tubular structure, for suturing this structure in two places with a pair of sterilized staples and for dividing the tubular structure intermediate the suturing staples. The instrument is provided with a variable cam so that the ligating, suturing and dividing stages are all performed with uniform effort from the operating surgeon. The instrument is also provided with a counter for indicating the number of staples remaining in the cartridge. The novel cartridge ensures that the stapled and severed tubular structures are ejected from the instrument after the operation, operates smoothly without binding, and includes a lock which holds the elements of the cartridge in fixed positions during all stages of transit.

3,735,763

HEMOSTAT

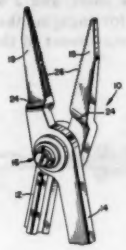
Suel Grant Shannon, and Norwood Claude Graeff, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 773,593, Nov. 5, 1968, abandoned, which is a continuation-in-part of Ser. No. 608,419, Jan. 10, 1967, Pat. No. 3,533,410. This application Mar. 25, 1970, Ser. No. 22,462

Int. Cl. A61b *17/28*

U.S. Cl. 128—322 **3 Claims**

A hemostat or similar device for clamping blood vessels, tubes, or the like and comprising a pair of pivotally mounted handle members joined by a hub integrally formed on one



handle member and secured to the opposite handle member by a retaining clip.

3,735,764

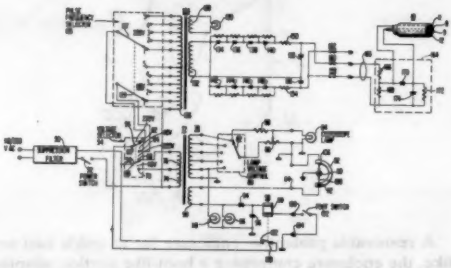
INSTRUMENT FOR CRUSHING STONES IN URINARY BLADDER

Oleg Gavrilovich Balev, Prospect 40-letia Oktyabrya 100, kv. 174; Jury Grigorievich Ediny, Rovenskaya ulitsa 7, kv. 58, and Nikolai Akimovich Korol, Prospect 40-letia Oktyabrya 108/128/17, kv. 3, all of Kiev, U.S.S.R.

Continuation-in-part of Ser. No. 871,849, Oct. 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 444,681, April 1, 1965, abandoned. This application Nov. 23, 1970, Ser. No. 92,056

Int. Cl. A61h *21/00, 29/00*; A61b *17/00*

U.S. Cl. 128—328 **21 Claims**



A method and apparatus for non-surgical removal of concretions in the urinary tract. A lithotrite including a central and outer electrode is connected to electric pulser means including spark discharge members for generation of electrical pulses which result in hydraulic shock waves being emitted from the lithotrite. In operation, the lithotrite is placed adjacent the concretion to be crushed which is surrounded by a dielectric fluid. The frequency and/or intensity of the hydraulic shock wave can be varied until the desired crushing of the concretion is achieved.

3,735,765

METHOD OF CLOSING LACERATIONS AND CLAMP THEREFOR

David L. Ichelson, 155 Birch St., Redwood City, Calif.

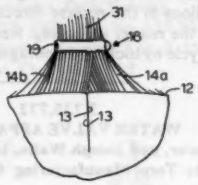
Filed Mar. 18, 1971, Ser. No. 125,505

Int. Cl. A61b *17/04*

U.S. Cl. 128—335 **4 Claims**

Lacerations of the scalp are closed by pulling the hair on opposite sides of the laceration perpendicular to the skin and then together directly above the laceration, thus pulling the skin together so that the edges are in close proximity. A clamp is applied to the hair, holding the skin in place with the edges close enough to heal together. Thus, use of sutures and necessity of shaving hair adjacent the wound is avoided. The clamp

has two pivoted jaws lined with a friction material which resists slippage and securely grips the hair when the jaws are



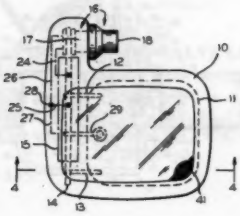
closed and latch means for holding the jaws closed. The clamp is preferably of materials which may be sterilized.

3,735,766

OPTIONAL UNIPOLAR-BIPOLAR BODY ORGAN STIMULATOR

David L. Bowers, Wauwatosa, and John E. Mohalski, Milwaukee, both of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 19, 1971, Ser. No. 135,069
Int. Cl. A61m 1/36
U.S. Cl. 128—419 P **14 Claims**



A body organ stimulator such as an electronic cardiac stimulator has the customary connector for attaching intracardiac catheter leads or myocardial leads to operate the stimulator in a bipolar mode. Set in the resin encapsulation of the stimulator or in an adapter is an indifferent electrode plate which connects internally of the device with one of the connector terminals. The plate in the stimulator or the adapter is dipped in medical grade silicone sealant. An insulating label or strip is then superposed over the sealant coated plate and it is dipped and cured again. At the time of implantation, the physician has the option of stripping the label to expose the plate so the stimulator may be operated in the unipolar mode or leave the strip in place for operation in the bipolar mode.

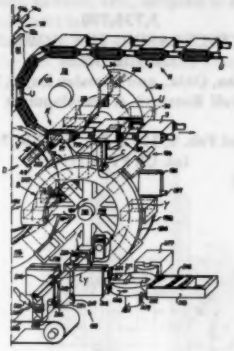
3,735,767

METHOD AND MACHINE FOR THE MAKING OF CIGARETTE PACKS OR THE LIKE

Friedel Kruse, Hamburg; Gunter Wahle, Reinbeck; Otto Erdmann, Hamburg, and Willy Rudszinat, Dassendorf, all of Germany, assignors to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Oct. 20, 1970, Ser. No. 82,468
Int. Cl. A24c 5/35; B65b 19/22
U.S. Cl. 131—25 **68 Claims**

A cigarette packing machine wherein empty packs are produced independently of the rate of formation and transport of blocks of cigarettes. The blocks of cigarettes are introduced into a compacting turret which rotates past a detector serving to effect transfer of an empty pack to a pack filling station whenever it detects a satisfactory blocks so that a particular empty pack is assigned to each scanned block. Unfilled packs are temporarily stored or immediately removed from the packing machine. If stored, the empty packs can be moved



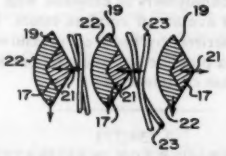
stepwise along an endless path defined by one or more turrets or one or more turrets and one or more belt conveyors.

3,735,768

METHOD AND MEANS FOR TREATING FILAMENTS OF HAIR, OR THE LIKE

Charles F. Burney, Tulsa, Okla., assignor to John Keneally, Monte Sereno, Calif., a part interest

Filed Sept. 30, 1971, Ser. No. 185,329
Int. Cl. A45d 2/00
U.S. Cl. 132—9 **9 Claims**



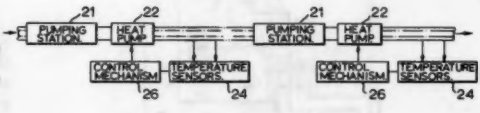
An improved method and means for curling hair uses relatively slidable combs to apply lateral forces to the hair as the teeth are drawn through the hair.

3,735,769

METHOD FOR PUMPING OIL THROUGH TERRAIN CONTAINING PERMAFROST

Jack Miller, 618 Athol St., Whitby, Ontario, Canada

Filed Apr. 8, 1971, Ser. No. 132,384
Int. Cl. F17d 1/14; F16k 49/00
U.S. Cl. 137—13 **6 Claims**



A method of pumping oil in the Arctic in which an oil pipeline is located inside a natural gas pipeline. The cold natural gas pipeline insulates the warm oil pipeline and prevents the latter from melting the permafrost. Alternatively, alternate slugs of oil and gas can be pumped through one pipeline or through two pipelines located side-by-side, the temperatures and volumes of the gas slugs being controlled so that the tem-

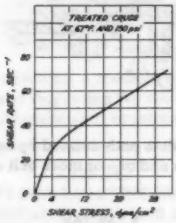
perature at the exterior of the pipeline installation remains below 32° F.

3,735,770

METHOD FOR INCREASING THE MOBILITY OF WAXY CRUDE OILS

John J. Day, Tulsa, Okla., and Jaroslav Zajac, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Feb. 9, 1972, Ser. No. 224,745
Int. Cl. F17d 1/16
U.S. Cl. 137—13 **11 Claims**



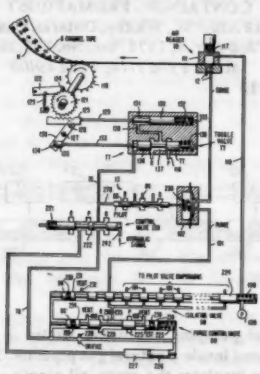
The mobility of waxy crude oils is increased by cooling a mixture of the crude oil and an amphipathic additive from a temperature higher than the nucleation temperature of the crude oil at a rate less than 10° F. per hour to a temperature at which nucleation of wax particles causing high pour point is virtually complete. Preferred amphipathic additives are alkylated phenols and copolymers of ethylene with polar organic compounds such as acetate or acrylate esters. The increased mobility is characterized by reduced pressures required to start flow through a pipeline and reduced pressure drop in a pipeline after flow has commenced.

3,735,771

PNEUMATIC READER FOR PERFORATED MEDIA

Hugo A. Panissidi, Peekskill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 824,424, May 14, 1969. This application Dec. 31, 1970, Ser. No. 103,223
Int. Cl. G06k 7/02
U.S. Cl. 137—15 **9 Claims**



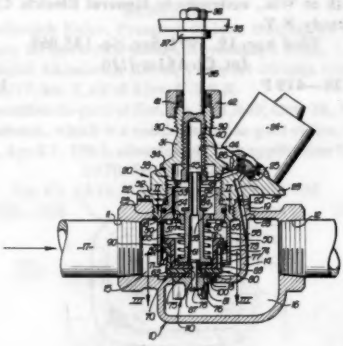
A pneumatic, perforated tape, intermittent motion reader is connected to a pneumatic-to-hydraulic interface in a hydraulic control system. A hydraulically controlled pneumatic purge system is provided for ejecting or purging foreign matter from the pneumatic reading lines between successive cycles of reading by the reader, by blowing air under high pressure through the lines in the reverse direction to the direction air travels when the reader is reading. Reading is blocked during the purging cycle by locking diaphragms in the interface.

3,735,772

WATER VALVE APPARATUS

Edwin J. Hunter, and Joseph Walto, both of Riverside, Calif., assignors to Toro Manufacturing Corporation, Riverside, Calif.

Filed May 20, 1971, Ser. No. 145,284
Int. Cl. F16k 31/40
U.S. Cl. 137—15 **10 Claims**



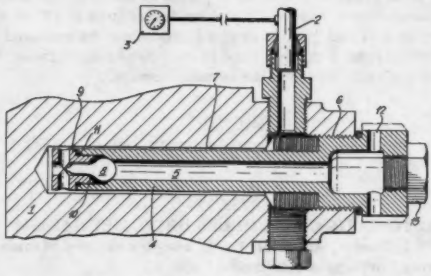
The water valve apparatus has a subassembly of molded plastic valve actuator parts provided within a brass valve housing including a body having inlet and outlet chamber divided by a ported partition, a threaded cap including electrically or hydraulically operated internal pressure controlling means and a flow control stem assembly mounted on the cap. The apparatus subassembly of internal parts includes a one-piece molded cylindrical insert means having an upper threaded neck portion for removable connection into the cap and a depending cylindrical skirt positioned within the valve body inlet chamber upon assembly of the cap to the valve body. Piston means, including nested inner and outer cup-like members clamping a ring seal means between flanges thereof, are provided within the cylinder with a valve closure member fastened to the underside of the piston means and a control rod slidably mounted within a web of the cylinder insert means seated within the inner cup-like member of the piston means and biasing it via associated spring means into a valve closure position. In the first exemplary embodiment, port means are provided through the piston means to allow inlet water pressure to operate the piston means within the associated insert cylinder means to a valve closed position subject to selective venting thereof via an electrically operated valve in the valve housing. In an alternative embodiment, a hydraulic line is associated with the valve housing for selectively applying pressure within the cylinder insert means to force the piston means into a valve closed position or allow it to move to an open valve position under the urging of inlet water pressure.

3,735,773

PNEUMATIC TEMPERATURE RELEASER

Henrik Pande Rolfsen, Snaroya, Norway, assignor to Thune-Eureka A/S Drammensveien, Oslo, Norway

Filed Mar. 23, 1971, Ser. No. 127,222
Claims priority, application Norway, Apr. 3, 1970, 1240/70
Int. Cl. F16k 17/38
U.S. Cl. 137—74 4 Claims



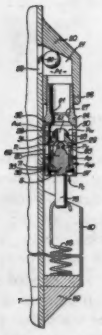
A gasfilled glass bulb which bursts when a predetermined temperature is reached is used as the valve body for closing a valve in a pipeline under pressure in which a pressure drop due to bursting of the bulb indicates a particular condition.

3,735,774

DIFFERENTIAL GAS LIFT VALVE APPARATUS

David V. Chenoweth, Houston, Tex., assignor to Baker Oil Tools, Inc., City of Commerce, Calif.

Division of Ser. No. 778,721, Nov. 25, 1968, Pat. No. 3,592,561. This application Nov. 25, 1970, Ser. No. 92,640
Int. Cl. F04f 1/20
U.S. Cl. 137—155 15 Claims



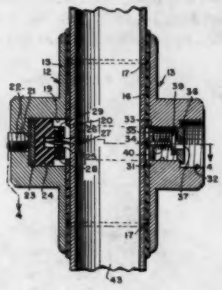
A well bore gas lift valve apparatus for controlling elevation of well bore liquids through a tubing string to the surface of the well bore. A main pressure differential valve controls the feed of gas from the tubing-casing annulus into the tubing string, the main valve containing a pilot pressure differential valve that also controls the gas feed from the tubing-casing annulus into the tubing string. The pilot or normal high differential pressure valve opens to admit gas to the tubing string on reduction of the casing-to-tubing differential pressure. This action further reduces the casing-to-tubing differential pressure, causing opening of the main valve, both valves then being open. The pilot valve first opens, assisting opening of the main valve. The main valve first closes, assisting closing of the pilot valve.

3,735,775

PIPE FITTING

Edward F. Tickett, El Paso, Tex., assignor to Alex B. Reynolds, St. Louis, Mo., a part interest

Filed Feb. 22, 1971, Ser. No. 117,761
Int. Cl. B23b 41/08; F16e 41/04
U.S. Cl. 137—318 9 Claims



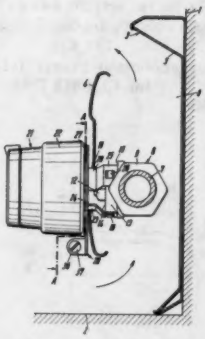
A pipe fitting which is capable of being attached to an existing pipe line for diverting a part of the flow of the pipe line through a branch line connected to the fitting, without interrupting the flow through the pipe line. A cutter carried by the fitting permits cutting of the pipe as the fitting is applied thereto to enable a part of the flow through the pipe line to be diverted to the branch line; and a valve carried by the fitting shuts off the flow from the fitting until the branch line is applied to the fitting, and enables the flow to the branch line to be shut off for any servicing operations subsequently required in connection with the branch line.

3,735,776

VALVE FOR A HEATING ELEMENT

Niels P. G. Graversen, 6440 Augustenborg, Denmark, and Carl Sorensen, deceased, late of Nordorg, Denmark (by Inger Vorre Sorensen, administratrix), assignors to Danfoss A/S, Nordborg, Denmark

Filed June 28, 1971, Ser. No. 157,303
Claims priority, application Germany, June 12, 1970, P 20 29 008.8
Int. Cl. F24f 11/00
U.S. Cl. 137—359 4 Claims



The invention relates to a heating valve assembly in which a valve casing is positioned behind a convector housing and a thermostatic member is positioned in front of the convector

housing. The thermostatic member carries a rotatable setting nob and has a short radially resilient base which can be snapped onto the neck of the valve casing which casing surrounds a valve spindle which is controllable by the setting knob.

3,735,777

AUTOMATIC VALVE

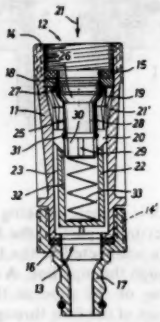
Johannes Katzer, and Franz Lopic, both of Neu-Ulm, Germany, assignors to Kupex AG, Gearus, Switzerland

Filed Jan. 24, 1972, Ser. No. 220,220

Claims priority, application Germany, Jan. 28, 1971, P 21 03 948.5

Int. Cl. F16k 17/04

U.S. Cl. 137—514.5 **19 Claims**



An automatic valve in which a valve body is located in a central chamber of a housing and fluid flow is directed through passages of progressively decreasing flow area formed between the valve body and the inside wall of the housing, thereby causing throttling of the flow in the chamber. A spring acting on the valve body balances the resulting pressure differential between the upstream and downstream sides of the valve body to hold the valve body in an open position during normal fluid flow. Should the flow exceed a predetermined amount, the pressure differential exceeds the force of the spring and the valve body moves to a closed position, shutting off flow through the system. To prevent an abrupt shutoff of the fluid flow, a damping device is provided for limiting the closing speed of the valve body.

3,735,778

DRIVING OF FLUIDS

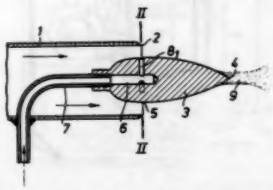
Michel Garnier, 28, Avenue Montaigne, Paris, France

Continuation-in-part of Ser. No. 846,423, July 3, 1969, Pat. No. 3,589,383. This application June 25, 1971, Ser. No. 156,870

Claims priority, application France, July 17, 1970, 7026477

Int. Cl. B05b 7/08

U.S. Cl. 137—604 **12 Claims**



A device for the fine, homogeneous pulverization of one fluid by another. The device comprises an intake pipe carrying the driving fluid, a tube carrying the fluid to be driven which is introduced into the driving fluid, and an olive-shaped mass arranged at the outlet of the intake pipe and coaxial therewith. The forward end of the olive-shaped mass extends beyond the plane of the outlet orifice of the intake pipe. The plane including the largest cross-section of the mass substantially coincides with the plane of the outlet orifice of the intake pipe. An annular passage is formed between the olive-shaped mass and the interior wall of the intake pipe. The pressure of the fluid is relatively low so that at least the portion in the vicinity of the olive-shaped mass flows parallel to the axis of the pipe. The tube is connected by a slit or radial channels to discharge the fluid to be driven at one or more points on the outer surface of the olive-shaped mass. A ring of blades inclined at 15° to the common axis and parallel to one another may be provided in the intake pipe. A further conduit may be provided about the intake pipe which defines the annular passage.

3,735,779

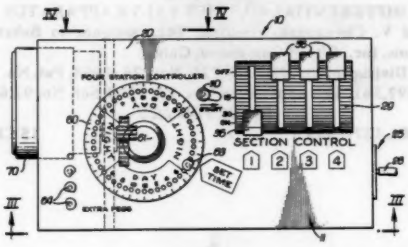
AUTOMATIC CONTROLLER DRIVE MECHANISM

Edwin J. Hunter, Riverside, Calif., assignor to Toro Manufacturing Corporation, Riverside, Calif.

Filed Oct. 19, 1971, Ser. No. 190,530

Int. Cl. A01g 27/00

U.S. Cl. 137—624.2 **6 Claims**



An automatic control apparatus having a caming means for operating a series of cam followers, a constant speed electric motor, and clutch and transmission means for selectively connecting the caming means to the constant speed motor to be driven thereby past the cam followers, such followers offering resistance to the movement of the caming means thereby when engaged by the caming means, is provided with rapid advance means associated between the clutch-transmission means and the caming means for storing energy received from the motor during operation thereof and for releasing the same to advance the caming means between engagements with the cam followers more rapidly than the advancement normally caused thereby by the motor. The transmission means has a drive shaft connected to the motor and the rapid advance means has a tubular member connected to the caming means and having an inside bore portion with a predetermined internal diameter, a wound wire spring secured at one end to the transmission means drive shaft and having an enlarged diameter portion adjacent the other end in a press fit in the tubular member to store energy during relative rotation between the drive shaft and tubular member prior to an operating cycle and for releasing such energy to rapidly advance the tubular member and associated caming means relative to the transmission means drive shaft during an operating cycle. The spring means is mounted in coaxial bores in a drive shaft and cam shaft, the latter having mating convex and concave bearing surfaces facilitating relative rotation therebetween during twisting and untwisting of the associated spring means.

3,735,780

VALVE

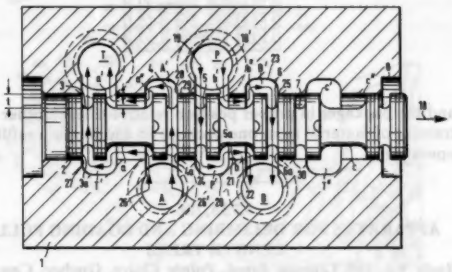
Walter Heid, 8770 Lohr/Main, Germany, assignor to Rexroth GmbH, Lohr/Main, Germany

Filed July 23, 1971, Ser. No. 165,649

Claims priority, application Germany, July 31, 1970, P 20 38 115.1

Int. Cl. F16k 4/00

U.S. Cl. 137—625.69 5 Claims



A housing of a valve has an internal elongated chamber provided with a plurality of longitudinally arrayed discrete annular spaces including two longitudinally spaced terminal ones each of which communicate with a port. An elongated valve member is received in and longitudinally slidable in this chamber and provided with a plurality of spaced annular recesses in its outer circumferential surface. Each of these recesses is bounded by longitudinally spaced flow control edges. At least one annular groove is also provided axially adjacent at least one of the annular edges of each pair in the valve member.

3,735,781

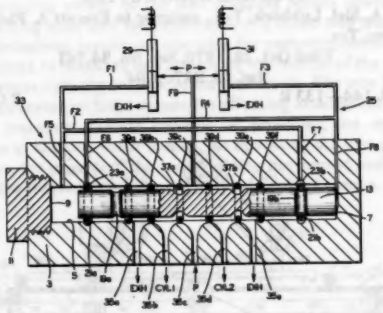
VALVE UNIT

Richard R. Kesti, Akron, Ohio, assignor to International Basic Economy Corporation, New York, N.Y.

Filed Nov. 9, 1971, Ser. No. 196,979

Int. Cl. F16k 11/00

U.S. Cl. 137—625.48 6 Claims



A valve unit or rectilinear positioning device having a plurality of operating positions and arranged such as to hold the operating position last encountered upon inactivation of the valve or positioning device moving and control means comprising a body including a bore, a slide positioner or slide valve reciprocable in the bore between the two operating positions, at least two elastic ring seals spaced along the bore, and partially recessed into the periphery thereof, said seals having an unexpanded ring diameter substantially equal to or slightly less than the ring diameter of complemental detents or recesses on the slide positioner into which the seals are selectively seated, means for applying fluid pressure to the ring seals and to the ends of the slide positioner or slide valve, and means for locking and unlocking the elastic ring seals to the slide positioner simultaneously with moving it to the next operating position and holding it in that position upon inactivation of the moving means.

3,735,782

SUCTION BEND FOR CENTRIFUGAL PUMPS

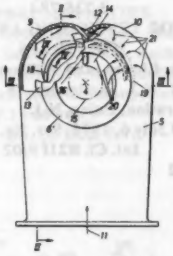
Michael Strscheletzky, 799 Friedrichshafen, Germany, assignor to J. M. Voith GmbH, Heidenheim, Germany

Continuation of Ser. No. 797,491, Feb. 7, 1969. This application June 24, 1971, Ser. No. 156,499

Claims priority, application Germany, Feb. 15, 1968, P 16 53 786.3

Int. Cl. F15d 1/06

U.S. Cl. 138—39 16 Claims



A suction bend, especially for centrifugal pumps, in which within the range or area where the substantially oppositely directed secondary flows impact upon each other, there is provided at least one rib which forms a boundary layer fence and extends primarily transverse to the flow lines of said flows.

3,735,783

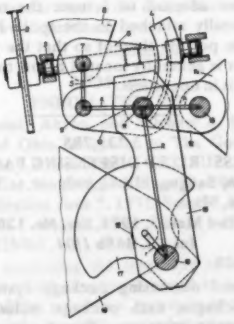
DRIVE MEANS FOR WEFT INSERTING APPARATUS FOR A LOOM

Gabler Fritz, Rheinstrasse 161, 7505 Ettlingen, and Hans Mihatsch, Grottenau 3a, 8871 Bubesheim/Gunzburg, both of Germany

Filed Oct. 26, 1970, Ser. No. 83,756

Int. Cl. D03d 47/00

U.S. Cl. 139—123 13 Claims



For regulating the operation of a weft inserting apparatus during each cycle of loom operation, a sector lever is positive-

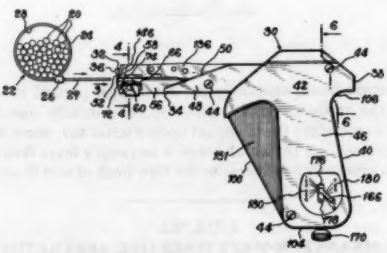
ly connected by a gear segment or similar element to the weft inserting apparatus and a linkage assembly is connected to the sector lever for reciprocating a weft inserting member during two-thirds of each cycle of loom operation and, during the remaining one-third of each cycle, retaining the weft inserting member in a position spaced outwardly from the shed of the loom. One end of the sector lever is secured to a fixed support and its other end is free so that during each cycle of operation the lever pivots through an angle in the range of 50° to 70°. The linkage assembly includes a coupling lever attached to the free end of the sector lever and during operation the coupling lever, relative to the sector lever, is disposed in a range of 90° to between 105° and 125°. In addition, the linkage assembly includes a driving lever pivotally connected at one end to the coupling lever and at its other end to a fixed support, a connecting rod connected to the point of pivotal attachment of the driving lever to the coupling lever, and a crank connected to the end of the connecting rod spaced from the coupling lever and the driving lever. The crank is arranged to be driven in synchronization with the main shaft of the loom.

3,735,784

HAND TOOL FOR TENSIONING AND CUTTING WIRE TIE STRAPS

Edward A. Obuch, Linden, and William T. Waddington, Fanwood, both of N.J., assignors to Buchanan Electrical Products Corporation, Union, N.J.

Filed July 6, 1971, Ser. No. 159,621
Int. Cl. B21f 9/02
U.S. Cl. 140—93.2 **21 Claims**



A hand tool for tensioning and cutting the strap of a wire tie, the tool having a draw bar for drawing the strap to a predetermined tension and a toggel-like linkage system for actuating a strap cutting means when the strap is drawn to a predetermined tension. Means are provided for selectively adjusting the predetermined tension in finite fixed increments and for providing a vernier or fine adjustment of the predetermined tension with reference to each finite fixed increment. An operating lever adapted to actuate the toggle-like linkage system is pivotally attached to the tool's handgrip near the remote bottom portion thereof so that the pivot point of the actuating lever is generally located below the operator's hand when the tool is in operation.

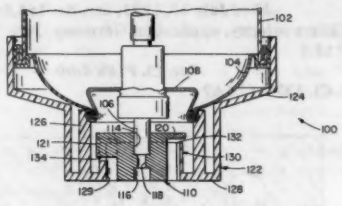
3,735,785

PRESSURIZED DISPENSING PACKAGE

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Mar. 3, 1971, Ser. No. 120,467
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—20 **23 Claims**

A pressurized dispensing package system includes two dispensing packages, each package including a projecting discharge passage structure. Transfer structure defines a closed passage that provides communication between the two discharge passage structures and interconnecting structure includes indexing means that permits the passage structures to be brought into communication only when the contents of the two packages are such that mixing of the contents is desirable, and latching structure for maintaining the transfer structure



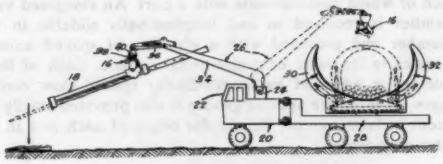
and the packages in proper position relative to each other for transfer of material from one package to another in a refilling operation.

3,735,786

APPARATUS FOR DELIMBING AND LOADING FULL-LENGTH TREES

Rudy Vit, 108 Leacock Road, Pointe Claire, Quebec, Canada

Filed June 15, 1971, Ser. No. 153,389
Int. Cl. A01g 23/08
U.S. Cl. 144—2 Z **7 Claims**



A debrancher and forwarder is described wherein a sliding boom debranching apparatus with clamping devices at the end of the boom are provided at the end of a loading crane.

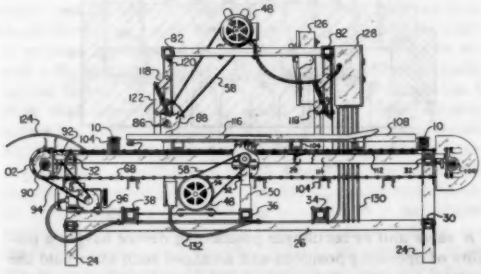
A vehicle can also be provided with a buncer in which a sling is subtended between picoting closing arms and the sling passes over an expanding and retracting piston and cylinder arrangement for tightening or slackening the sling.

3,735,787

STUD AND DADO CUTTER

Harry A. Siel, Lubbock, Tex., assignor to Everett A. Platt, Jr., Idalou, Tex.

Filed Oct. 28, 1970, Ser. No. 84,741
Int. Cl. B27c 5/04
U.S. Cl. 144—133 R **7 Claims**

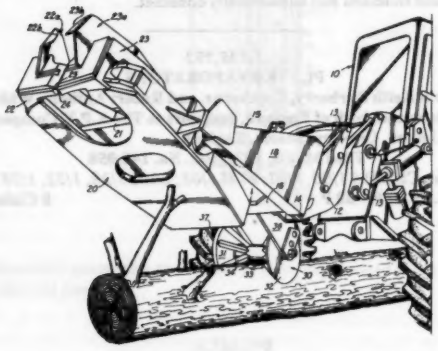


A series of wooden studs are clamped into a chain-feed means which moves them transversely of their length past a plurality of stations. At one station they are cut to length and at other stations dados are cut in them; thus producing a plurality of identical studs with dados therein.

3,735,788
TREE HARVESTING APPARATUS

Samuel J. Coughran, Jr., Cedartown, Ga., assignor to Rome Industries, Incorporated, Cedartown, Ga.

Continuation-in-part of Ser. No. 782,626, Dec. 10, 1968, Pat. No. 3,572,411. This application Mar. 22, 1971, Ser. No. 126,838
Int. Cl. A01g *23/08*
U.S. Cl. 144—309 AC 20 Claims



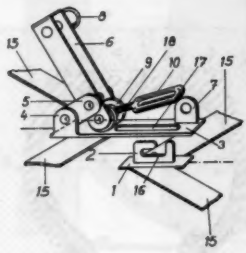
A tree harvesting apparatus including means for severing a standing tree adjacent the base allowing the severed tree to fall to the ground, means for grasping the severed tree and removing the tree, by skidding, to a remote location and means for traversing the felled tree trunk to remove limbs therefrom. The tree severing means includes an operable shear blade supported for movement between a retracted inoperable position to a forward tree shearing position. The tree grasping means includes a pair of arms movable from an open position to a position in engagement with the surface of the tree trunk. One operable delimbing means on the tree harvesting apparatus includes a rotatable wheel means mounted thereon for contacting upper surface portions of the felled tree trunk. A second delimbing means includes severing means operatively associated with tree grasping means, with the severing means of the tree grasping means operable for contacting sides and lower portions of a felled tree trunk. The two delimbing means are operable for removing limbs from a tree trunk in response to a traversing movement of the delimbing means over the surface of the tree trunk. The tree harvesting apparatus includes means for effecting attachment thereof to a transport vehicle capable of providing the operative power to the tree shear means, for operating the tree grasping means, for providing the tree skidding movement and to provide the traversing movement of the delimbing means.

3,735,789
REMOVABLE ANTI-SKID ARRANGEMENT FOR VEHICLE TIRES

Meinrad Landerer, Naus Nr.12, 8972 Tiefenbach, and Anton Kuisle, 8971 Burgberg 172, both of Germany

Filed Dec. 16, 1970, Ser. No. 98,761
Int. Cl. B60c *27/10*
U.S. Cl. 152—217 7 Claims

The invention relates to a removable anti-skid arrangement for vehicles tires comprising, on opposite faces of the tire, a pair of releasably secured plates, each plate having a pair of arms, the free ends of said arms interconnected by a chain,

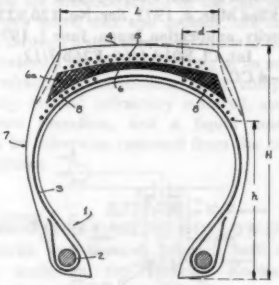


and the chains interconnected by cross chains disposable over the treads of the tire.

3,735,790
PNEUMATIC TIRE

Marcel J. Bertrand, Grivegnee-Liege, Belgium, assignor to Uniroyal Englebert Deutschland AG, Aachen, Germany

Filed Oct. 26, 1970, Ser. No. 83,976
Claims priority, application Germany, Nov. 5, 1969, P 19 55 669.5; Dec. 4, 1969, P 19 60 943.9
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 9 Claims



A radial ply tire in which grooves due to wear at the edge regions of the tread are minimized. One embodiment of the tire includes a radial ply carcass, a layer of fiber-reinforced rubber material, a pair of circumferentially extending strips of fabric at the shoulder regions having cords obliquely disposed with respect to the circumference of the tire, a circumferential belt, and tread and sidewall portions.

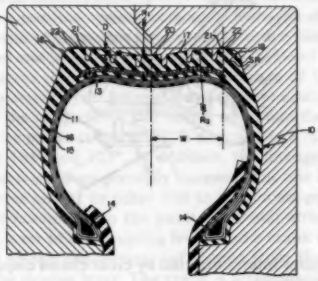
3,735,791
PNEUMATIC TIRE

Lance R. McKissick, Akron, and Michael A. Kolowski, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 849,475, Aug. 12, 1969, abandoned. This application June 7, 1971, Ser. No. 150,713
Int. Cl. B60c *3/00*
U.S. Cl. 152—352 12 Claims

A method of increasing the tread life of a radial belted pneumatic tire in which the tire is cured in a mold with the central portion of the tread in a reversely curved configuration. The depth of the reversely curved portion, during curing in the mold, is maintained within predetermined limits, and this reverse curvature in the tread is removable from the completely manufactured tire by inflation of the tire to design pressure.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full



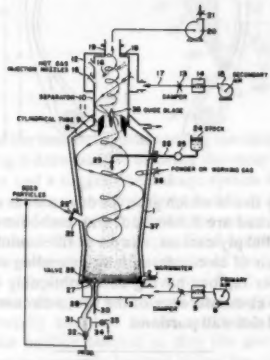
nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

3,735,792

SPRAY DRYING METHOD AND APPARATUS FOR PRODUCING GRANULAR PARTICLES FROM STOCK LIQUIDS OF SOLIDS

Naohito Asizawa, Sugihami-ku, Tokyo, and Motomi Kono, Edogawa-ku, Tokyo, both of Japan, assignors to Asizawa Tekko Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1971, Ser. No. 120,922
Claims priority, application Japan, June 1, 1970, 45/47026
Int. Cl. B01d *1/16*; F26b *3/12*
U.S. Cl. 159—4 CC 8 Claims



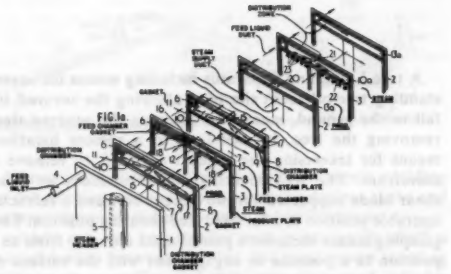
A spray drying method comprising forming a layer of solid particles at the bottom of a drying chamber defined by a vertical cylinder, blowing gas into said layer from the underside to agitate the whole of said layer and thereby to form a fluidized bed of solid particles with part of said particles being blown up from the upper surface of said fluidized bed and suspended within said drying chamber, blowing gas into said drying chamber in a direction to form a swirling downward gas flow along the side wall and a swirling upward flow along the center of said drying chamber, whereby said suspending particles are caused to make a circulatory motion while being entrained in said swirling gas flows in such a manner that the fine particles spirally move upward in the center of the drying chamber and at least the major part thereof approach the side wall of the drying chamber under the effect of centrifugal force before they reach the top of said drying chamber and finally spirally move downward along the side wall of said chamber, said particles being partially returned to said fluidized bed and partially being carried upward again in the center of the drying chamber by being entrained in said swirling upward gas flow, spraying stock solution into said drying chamber, the droplets of said sprayed stock solution colliding against and adhered to said circulating particles to form larger sized particles, said larger sized particles being dried by the surrounding gas and partially circulated within said drying chamber and partially falling into said fluidized bed, and discharging said larger sized particles from said fluidized bed while maintaining the depth of said fluidized bed substantially constant.

3,735,793

PLATE EVAPORATORS

Robin Keith Burberry, Copthorne, and Robert Anthony White, Banstead, both of England, assignors to The A.P.V Company Limited, Crawley, Sussex, England

Filed May 4, 1971, Ser. No. 140,058
Int. Cl. B01d *1/00*, *3/02*; F28f *3/08*; B01d *3/28*, *1/22*, *1/28*
U.S. Cl. 159—28 P 8 Claims



A plate type evaporator of the falling film type, comprising a pack of plates arranged in spaced face-to-face relationship and gasketed to define flow spaces for heating medium and feed liquid between the plates, characterized in that distribution means is provided to distribute the feed liquid across the flow spaces, the said distribution means comprising at least one restriction leading to a transversely extending distribution zone in communication with one or more flow spaces, the restriction being adapted to cause some flashing of vapor from the feed liquid whereby a mixture of liquid and vapor is present in the distribution zone, the or each distribution zone communicating with the respective flow spaces through a series of laterally spaced further restrictions which are adapted to produce further flashing as the liquid and vapor mixture passes through them.

3,735,794

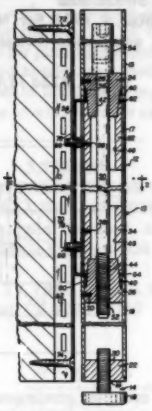
SPACE DIVIDER SYSTEM

Samuel Lebowitz, Brooklyn, N.Y., assignor to Tieco Products, Inc., Royal Oak, Mich.

Filed July 2, 1971, Ser. No. 159,143
Int. Cl. A47g *5/00*
U.S. Cl. 160—135 5 Claims

A corner post assembly for connecting panels or dividers to form a space divider system. The panels terminate in a bracket

which is attached to the post and is slidably rotatable



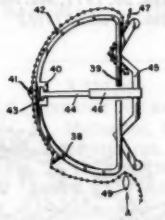
therewith permitting the panels to form any desired angle with adjacent panels.

3,735,795

SUPPORT FOR SUSPENDING A CURTAIN

Johannes Bernardus Broek, Aarle-Rixtel, Netherlands, assignor to Plastofold A.G., Herisau, Switzerland

Filed Nov. 12, 1970, Ser. No. 88,772
Int. Cl. A47h *13/14*
U.S. Cl. 160—348 7 Claims



A support for suspending a curtain including the supporting member has a curved portion in front and two cloth fixing means at the rear thereof. Each of said means is adapted to hold a double thickness of curtain cloth formed by making a fold in the curtain adjacent the means. The cloth between said fixing means extends over said portion, thereby obviating visibility of said curved portion.

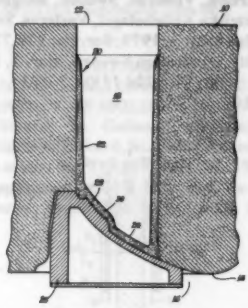
3,735,796

PERMANENT MOLD RISERING

Andrew Gerald Germain, Medinah, Ill., and Donald Ray Wiles, Muncie, Kans., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Dec. 22, 1971, Ser. No. 210,638
Int. Cl. B22c *9/12*
U.S. Cl. 164—23 3 Claims

A graphite mold has riser openings lined with an insulator extending around the periphery and substantially across the bottom of the openings. The bottom portion of the insulator is formed of facing sand and phenolic resin while the peripheral portion of the insulator is formed of a coarser backing sand and phenolic resin. The insulator is baked by residual heat in



the mold and decreases in thickness from the bottom toward the top of the riser opening.

3,735,797

PROCESS AND APPARATUS FOR DIE-CASTING OF FERROUS METALS

Jean Louis Jeanneret, Brecksville, Ohio, assignor to Foseco International Limited, Birmingham, England

Continuation of Ser. No. 811,212, March 27, 1969, abandoned. This application Sept. 3, 1971, Ser. No. 177,844
Claims priority, application Great Britain, Mar. 27, 1968, 14,717/68
Int. Cl. B22c *3/00*
U.S. Cl. 164—72 8 Claims

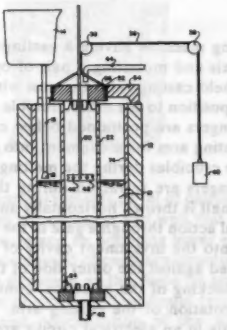
In a process for the production of die-cast ferrous metals, using refractory metal dies and moulds, the molten ferrous metal passes through a shot sleeve en route to the mould. The invention provides a continuous coating of an adherent, heat-insulating, refractory composition. Said composition comprises a finely divided refractory material, suspending and binding agents therefore, and a liquid media that will evaporate or be otherwise removed from the composition at high temperatures.

3,735,798

METHODS FOR CASTING HOLLOW INGOTS

Friedrich Kocks, and Hans J. Lippert, both of Dusseldorf, Germany, assignors to Friedrick Kocks, Dusseldorf, Germany

Filed July 15, 1970, Ser. No. 55,177
Claims priority, application Germany, Aug. 30, 1969, P 19 44 149.7
Int. Cl. B22d *23/00*
U.S. Cl. 164—94 15 Claims

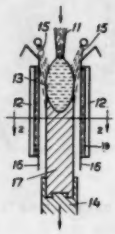


An apparatus and method are provided for producing hollow castings wherein an axial tube of metal inserted in a mold and molten metal is poured in the area between the tube and mold to form a metallurgical bond with the tube.

3,735,799
DEVICE FOR CONTINUOUS CASTING OF METAL

Karl Gosta Karlson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 1, 1971, Ser. No. 119,776
Claims priority, application Sweden, Mar. 3, 1970, 2740/70
Int. Cl. B22d 11/00, 27/02
U.S. Cl. 164—147 2 Claims

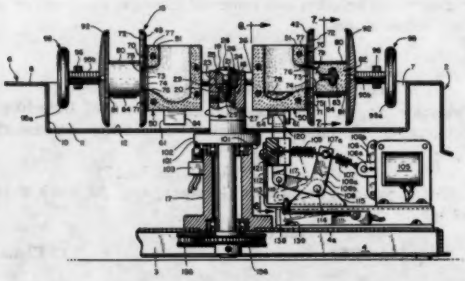


An electromagnetic field is produced in a flow of molten metal by a coil surrounding the flow in order to establish forces in the flow. A coolant is applied to the solidifying and solidified surface of the ingot produced from the flow. A thin non-magnetic screen in positioned between the coil and the flow and insulating material is positioned between the screen and the coil. Coolant is also applied to the screen.

3,735,800
CENTRIFUGAL CASTING MACHINE

Karl H. Huppert, S. Holland, and Stephen J. Schipitsh, Hickory Hills, both of Ill., assignors to K. H. Huppert Co., Inc., South Holland, Ill.

Filed Feb. 26, 1971, Ser. No. 119,235
Int. Cl. B22d 13/06
U.S. Cl. 164—250 10 Claims

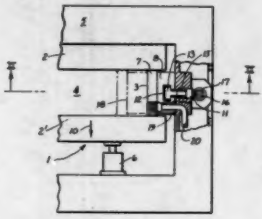


A casting machine having a casting arm rotatable about a vertical axis and mounting a pair of opposed graphite crucibles and held casting rings thereon with one crucible casting ring in opposition to the other crucible ring wherein electrode contact fingers are positioned below crucible contact blocks on the casting arm for movement into electrical contact with one of the crucibles during the melting cycle and wherein the contact fingers are retracted during the spin cycle at which time the melt is thrown horizontally and radially outwardly in centrifugal action through a gate in the side of the appropriate crucible into the investment cavity of the associated casting ring abutted against the outer side of the respective crucible. The interlocking of the electrical contact fingers and blocks prevents rotation of the casting arm. Interlocking electrical components in an electrical circuit are employed to prevent rotation of the casting arm when the electrode contact fingers are engaged with the crucible contact blocks and the components permit the rotation when the electrodes are withdrawn.

3,735,801
CONTINUOUS CASTING MOLD

Max Burkhardt, 8049 Zurich, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed Mar. 9, 1971, Ser. No. 122,345
Claims priority, application Switzerland, Mar. 10, 1970, 3481/70
Int. Cl. B22d 11/06
U.S. Cl. 164—273 7 Claims

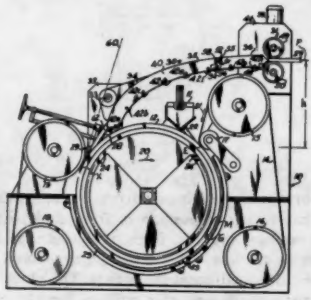


A built-up plate mold for continuous casting of slabs comprises a supporting frame and longitudinal and transverse mold walls. The transverse walls are normally clamped between the longitudinal walls but can be released for removal and replacement by movement of at least one longitudinal wall. The transverse walls are also clamped to the supporting frame by releasable means operable from the top of the mold so that they may be removed and replaced without removal of the entire mold.

3,735,802
CASTING MACHINE WITH LOW PROFILE CONVEYOR

Enrique C. Chia, 42 Tower Apts.; George C. Ward, 128 Bennett Cir., and George E. Lenaeus, 301 Sunset Blvd., all of Carrollton, Ga.

Division of Ser. No. 737,719, June 17, 1968, abandoned. This application Jan. 26, 1971, Ser. No. 109,864
Int. Cl. B22d 11/12
U.S. Cl. 164—278 6 Claims



Disclosed herein is a continuous casting machine having a casting wheel with a groove closed by a band to form a casting mold and including a conveying means for conveying cast metal between the casting mold and a substantially horizontal path in a manner that reduces voids in the cast metal, that reduces the concentrations of dissolved gases in the cast metal, that increases the production rate of the casting machine, and that facilitates the initial removal of the cast metal from the casting mold while at the same time providing for convenient and efficient pouring of molten metal into the casting mold. Specifically, the conveying means in the casting machine disclosed is a low-profile conveyor positioned and shaped to place the cast metal leaving the casting mold in a predetermined arcuate path which provides for relatively little vertical displacement of the cast metal above the casting

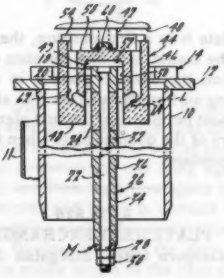
wheel, which extends the length of the portion of the circumference of the casting wheel which may be used as the casting mold, which is a path into which cast metal leaving the casting mold will initially pass with a minimum of manual guidance, and which provides for the passage of the cast metal over pouring apparatus used for pouring molten metal into the casting mold. Also disclosed herein are a method of casting molten metal and a method of manufacturing a casting machine which embody the same invention as the casting machine.

3,735,803

METHOD OF AND APPARATUS FOR CONTINUOUSLY CASTING A HOLLOW BILLET

Thomas B. Arrington, and Leonard A. Moody, both of Decatur, Ala., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 19, 1971, Ser. No. 134,953
Int. Cl. B22d 11/10
U.S. Cl. 164—281 30 Claims



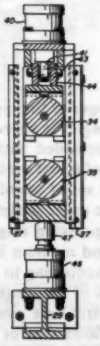
Melted metal, typically copper, is applied through floating valve means to a water-cooled mold containing a mandrel of special form and materials so as to result in continuous downward movement of the solidified billet through the bottom lower end of the mold and over the lower end of the mandrel.

3,735,804

ADJUSTABLE CONDUCTING ROLL APPARATUS

George J. Wagner, Jr., McDonald, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 25, 1971, Ser. No. 118,799
Int. Cl. B22d 11/06
U.S. Cl. 164—282 11 Claims



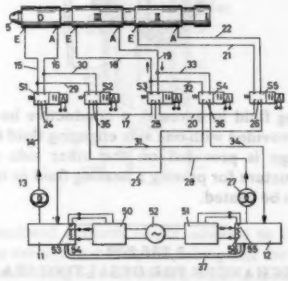
Apparatus for conducting a continuously formed casting through a portion of a continuous-casting machine which offers high resistance to movement of the casting therethrough. The apparatus has rolls carried by an inner frame movable in a fixed housing. One roll moves with the inner frame and the other moves independently thereof to close on and drive a casting therethrough whether the casting enters the housing above, below, or on the theoretical pass line.

3,735,805

METHOD AND APPARATUS FOR THE TEMPERATURE CONTROL OF MOLDING MACHINES

Bruno J. Stillhard, St. Gallen, Switzerland, assignor to Gebruder Buller AG, Uzivil, St. Gell, Switzerland

Continuation of Ser. No. 759,334, Sept. 12, 1968, abandoned.
This application Jan. 18, 1971, Ser. No. 107,475
Claims priority, application Switzerland, Sept. 15, 1967, 12979/67
Int. Cl. F25b 29/00
U.S. Cl. 165—12 7 Claims



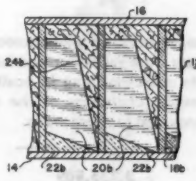
A compression or injection molding machine is connected to a source of hot temperature controlling fluid and to a source of a cooler temperature controlling fluid. Each component of the apparatus is provided with a common passage for flow of both fluids therethrough. Pulses are provided as a function of variation of the temperature of a component with respect to a selected temperature, and these pulses are used to selectively supply or interrupt flow of one or the other of the fluids through the associated common flow passage in accordance with the direction of the temperature variation.

3,735,806

UNIDIRECTIONAL THERMAL TRANSFER MEANS

Milton E. Kirkpatrick, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 7, 1970, Ser. No. 95,488
Int. Cl. F28d 15/00
U.S. Cl. 165—32 7 Claims



A unidirectional thermal transfer panel of cellular construction wherein each cell has an upper end wall that bears an internal capillary structure and an opposing lower end wall that has an inclined surface devoid of capillary structure. Thermal transfer in the same direction as the force of gravity occurs through vaporization of working fluid liquid from the upper capillary structure and condensation of the working fluid vapor on the inclined surface below. A conduit connected between the lowermost point on the inclined surface and the capillary structure above has high liquid capillary flow properties to transfer the working fluid liquid condensate to the capillary structure above in opposition to the force of gravity

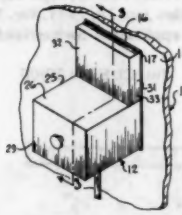
and high thermal impedance to prevent thermal conduction in that direction.

3,735,807

HEATER FOR FLUID CONTAINED IN A VESSEL

Benner E. Hunt, Box 94, Stockton, N.J.

Filed June 18, 1971, Ser. No. 154,367
Int. Cl. F27h 3/10
U.S. Cl. 165—47 4 Claims



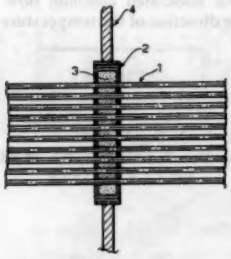
For heating fluid in a vessel, a conductive heat exchange structure is provided with one side engaging fluid in the vessel, and a passage is provided on the other side of the heat exchange structure for passing a heating fluid to transmit heat to the fluid to be heated.

3,735,808

HEAT-EXCHANGER FOR DESALTING SEA WATER

Diego Barba; Giuseppe Liuzzo; Giovanni Tagliaferri, and Antonino Germana, all of Rome, Italy, assignors to Societa Italiana Resine S.p.A., Milan, Italy

Filed July 1, 1971, Ser. No. 158,826
Claims priority, application Italy, July 1, 1970, 26846A/70
Int. Cl. F28f 7/00
U.S. Cl. 165—69 2 Claims



The heat-exchanger tubes of instantaneous evaporators for providing fresh water from saline formed into a unitary nest by transverse supports corresponding in position with the walls dividing off successive chambers of the evaporator and in shape with holes provided in those walls.

3,735,809

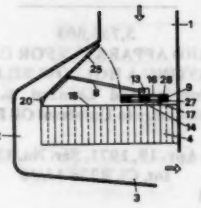
FLUID DISTRIBUTION DEVICE

Katsuaki Matsushima, Aichi-ken, Toyota City, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota City, Aichi-ken, Japan

Filed Sept. 7, 1971, Ser. No. 178,215
Claims priority, application Japan, Sept. 9, 1970, 45/79007
Int. Cl. F28f 27/02
U.S. Cl. 165—103 9 Claims

A heat exchanger for an air flow, comprising; a duct with a hump; a heat transfer matrix mounted on the duct within the hump in a spaced manner to make a free air flow passageway, a damper plate pivotally mounted on the matrix, a first plate having a plurality of first apertures and mounted on the duct, a second plate with a plurality of second apertures, a device for linking the second plate with the damper plate, and apparatus connected to the damper plate for holding the damper plate in a first or second position and moving the damper plate therebetween.

The damper plate closes the free air flow passageway when



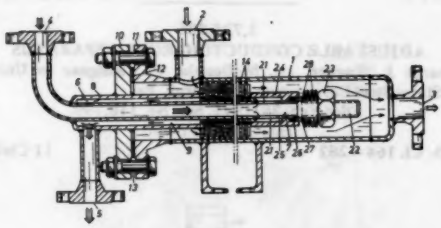
the damper plate is in a first position, thereby forcing air to flow through the matrix, said damper plate covers a portion of the matrix when the damper plate is in a second position, thereby allowing air flow through the free air flow passageway, and an uppermost periphery of the first plate is contiguous to a lower periphery of the damper plate when the damper plate is in the second position.

3,735,810

PLATE HEAT EXCHANGER

Karl Robert Ambjorn Ostbo, Storgatan 2, S-510 Tranemo, Sweden

Filed Feb. 18, 1971, Ser. No. 116,423
Claims priority, application Sweden, Aug. 21, 1970, 1146/70
Int. Cl. F26d 7/12
U.S. Cl. 165—142 3 Claims

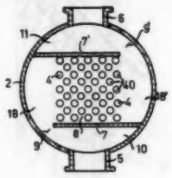


A plate heat exchanger of the type comprising a shell housing circular discs arranged in succession separated by sealing rings. The discs are provided with two sets of openings for passage therethrough of a first medium and a second medium, respectively. The first set of openings for the first medium is positioned close to the outer periphery of the discs, i.e., radially outside of the separating rings, while the second set of openings for the second medium is positioned radially inside the separating rings. According to one embodiment of the invention the second set of openings are notches formed at the edge portion of a central hole passing through the discs and through which hole flows one of said media. According to another embodiment of the invention the discs are mounted on an axial tube the inner end of which extends inside the shell and is formed with slots but is otherwise closed, this tube end being also provided with a sleeve serving to guide medium flowing through the tube and passing through the slots, in through the notches at the central hole of the discs.

3,735,811
HEAT EXCHANGER

Paul Moser, Winterthur, and Tadeusz Zaba, Wettingen, both of Switzerland, assignors to Brown Boveri-Sulzer Turbomaschinen Aktiengesellschaft, Zurich, Switzerland

Filed July 12, 1971, Ser. No. 161,467
Claims priority, application Switzerland, July 17, 1970, 10915/70
Int. Cl. F28d 7/00; F28f 9/22
U.S. Cl. 165—160 7 Claims

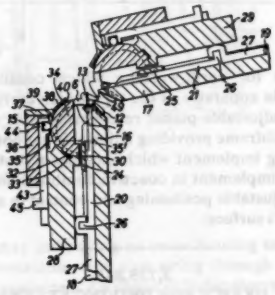


Heat exchanger with a cylindrical housing and heat exchanger elements arranged axially and centrally of the housing; two connections in the cylindrical wall of the housing; two partitions facing the connections, and lying against the heat exchanger elements, and forming a flow space containing the heat exchanger elements and being in contact with the connections only by throttling gaps between partition and tubular wall. The medium flowing through the flow space being widened out over the entire length of the heat exchanger elements.

3,735,812
KNITTING MACHINES

John Flavell; Max William Betts, both of Coventry, and Frank Robinson, Borrowash, all of England, assignors to Courtaulds Limited, London, England

Filed Dec. 10, 1970, Ser. No. 96,728
Int. Cl. D04b 15/06
U.S. Cl. 66—104 16 Claims

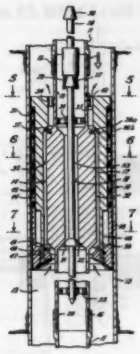


A sinker for a knitting machine with independently operable needles, has a curved edge for sliding engagement with a supporting structure in a knitting machine, a hook for engaging and pushing down knitted loops, a nose extending forward of the open mouth of the hook and presenting an edge to support knitted loops for engagement by the hook, and a raised edge extending rearwardly from the point of the hook. A knitting machine comprising such a sinker and a method of operating the machine are also described.

3,735,813
STORM CHOKE

William T. Mack, P.O. Box 3112, and Thomas Quinn, 122 West Amherst, both of Tyler, Tex.

Filed Mar. 12, 1971, Ser. No. 123,742
Int. Cl. E21b 33/00
U.S. Cl. 166—183 13 Claims

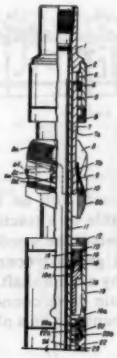


There is disclosed a storm choke adapted to close a well tubing and the annulus between the tubing and the well casing into which the tubing is run in response to predetermined changes in the velocity of well fluid flowing upwardly through the tubing and casing, respectively.

3,735,814
RESILIENT SLIP SUSPENSION MEANS FOR HYDRAULIC PACKER

Andrew J. Tucker, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 24, 1971, Ser. No. 146,056
Int. Cl. E21b 23/00
U.S. Cl. 166—217 7 Claims



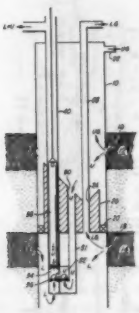
A resilient mounting for the upper slip in a Hydraulic packer which holds the upper slip carrier and the slip carried thereby in retracted position out of contact with the upper packer head while running in the hole so that if the packer is stopped suddenly or the slip encounters an obstruction which tends to cause the slip to move downwardly in contact with the upper packer head, a spring in the suspension head will cause the carrier and the slip mounted thereon to move back into relaxed running position out of contact with the casing.

3,735,815

METHOD AND APPARATUS FOR PRODUCING MULTIPLE ZONE OIL AND GAS WELLS

Nijah F. Myers, Oklahoma City, Okla., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 19, 1971, Ser. No. 163,855
Int. Cl. E21b *43/00*
U.S. Cl. 166—313 **12 Claims**



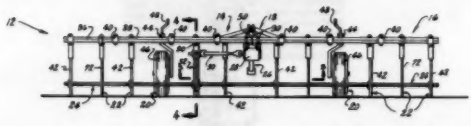
Two or more oil and gas zones are produced by allowing production from at least one zone to drain down to a common chamber where production from the zones is comingled and lifted to the earth's surface. A separate gas bent is provided for each zone to the earth's surface.

3,735,816

ROD WEEDER DRIVE ASSEMBLY

Dale G. Koehn, Rural Route 1, Montezuma, Kans.

Filed Feb. 1, 1971, Ser. No. 111,431
Int. Cl. A01b *39/19*
U.S. Cl. 172—44 **1 Claim**



A drive assembly used with an implement having a rod weeder that is attachable to a tractor vehicle. The drive assembly is adapted to rotate the weeder rod of the rod weeder implement, and has a gearbox connectable with the power takeoff of the tractor by a main shaft, a second shaft connects the gearbox and a chain drive connected to the weeder rod contained in a strut mountable on a plow of the rod weeder.

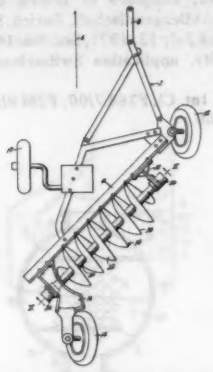
3,735,817

HELICAL PLOW

Harlan H. Tatge, 118 N. Broadway, Herington, Kans.

Filed Dec. 28, 1970, Ser. No. 101,940
Int. Cl. A01b *5/00*
U.S. Cl. 172—532 **1 Claim**

A plow consisting of a wheeled frame and a helical plow share resembling an auger carried rotatably by said frame on a horizontal axis which is horizontally angled relative to the direction of travel of said frame, the convolutions of said plow share being radially concave at the sides thereof facing the forward end of said plow share.

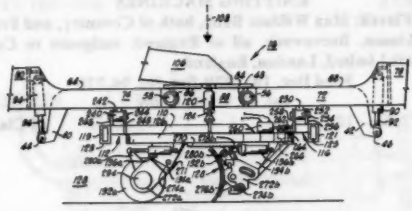


3,735,818

MOTOR-GRADER IMPLEMENTS

George W. Swisher, Jr.; Don W. Smith, and Gordon L. Spivey, all of Oklahoma City, Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 793,274, Jan. 23, 1969, Pat. No. 3,568,778. This application Oct. 19, 1970, Ser. No. 81,744
Int. Cl. E02f *3/12*
U.S. Cl. 172—785 **11 Claims**



Apparatus for earth-working which consists of motor-grader mobile apparatus of the type which carries a subframe element in adjustable planar relationship with respect to the earth, said subframe providing adjustable support for a cutting and trimming implement which includes a first earth-cutting and moving implement in coactive combination with a mold-board for adjustable positioning and contact in a pre-set plane of said earth's surface.

3,735,819

DEVICE FOR DRIVING STAKES

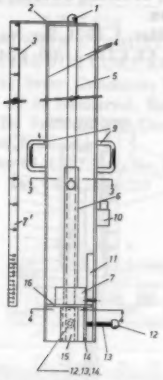
William W. Ramsey, c/o Anchorage Mobile Homes, 1925 N. Federal Hwy., Lot 32, Delray Beach, Fla.

Filed Apr. 28, 1971, Ser. No. 138,122
Int. Cl. B25d *1/00*
U.S. Cl. 173—21 **5 Claims**

A device for driving stakes and the like into the ground for establishing the elevation of the stake down from the outside line of the building down to the bottom of the footer.

The invention contemplates a novel structure wherein a vertical frame of suitable height and configuration is provided to guide the stake into the ground in combination with the means

to impart blows to the top of the stake and measure the penetration of the stake into the ground.



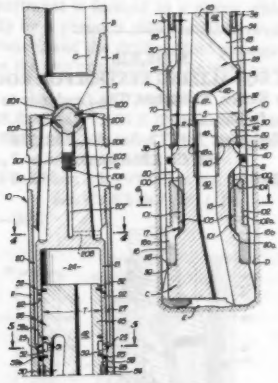
Suitable scales are provided for assuring that the stake is driven the desired distance.

3,735,820

BORE HOLE AIR HAMMER

Alfred R. Curington, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed May 5, 1971, Ser. No. 140,515
Int. Cl. E21b 1/06
U.S. Cl. 173—78 **18 Claims**



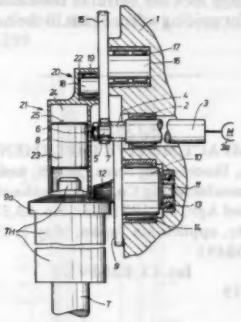
An air hammer embodying an outer housing structure connectible to a rotatable drill pipe string through which compressed air is conducted. An upper cylinder sleeve in the housing structure defines an annular air inlet passage therewith, a hammer piston reciprocating in the housing structure with an upper smaller diameter portion slidable in this sleeve and a larger diameter portion in the housing structure below this sleeve, such that high pressure acts over the full cross-sectional area of the larger diameter piston portion in driving the piston downwardly against a companion anvil affixed to a drill bit rotatable by the drill pipe string and housing structure, compressed air acting over a smaller diameter piston area and returning the piston upwardly in the housing structure, all of the air being caused to exhaust through the anvil and bit to clean the bit and the bottom of the bore hole of cuttings.

3,735,821

TRANSMISSION MEANS FOR USE IN TORQUE AND IMPULSE TRANSMITTING MACHINES

Reinhard Hahner, Stuttgart, and Wolfgang Schmid, Plattenhardt, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 25, 1971, Ser. No. 156,735
Claims priority, application Germany, July 3, 1970, P 20 32 941.3
Int. Cl. B25d 11/04
U.S. Cl. 173—104 **8 Claims**



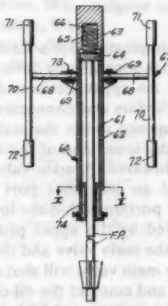
A portable torque and impulse transmitting machine wherein the output shaft of an electric motor carries two coaxial gears. One of the gears drives a first transmission which rotates the holder for a rotary tool, and the other gear transmits torque to a second transmission serving to oscillate an impeller which transmits impulses to the tool holder to thereby promote the penetration of the rotating tool into a wall or the like. One of the gears is integral with the output shaft and its modulus and the number of its teeth may, but need not differ from the modulus and the number of teeth of the other gear.

3,735,822

MANUALLY ACTUATED JACK HAMMER

Robert F. Delke, Cheyenne, Wyo., assignor to William H. Chamberlain and Anna B. Chamberlain, Cheyenne, Wyo., part interest to each

Filed Mar. 12, 1971, Ser. No. 123,787
Int. Cl. B25d 1/00
U.S. Cl. 173—118 **9 Claims**



A manually actuated jack hammer useful as an ancnor or post driver, a compactor, a pavement breaker and the like, composed of telescoped ram and barrel members, a recoil spring and a handle which when manually reciprocated will drive the ram and through the recoil action of the spring establish a systematic rhythm causing repeated impact blows with minimum applied manual energy. For low level usage such as for driving anchors into the ground, for compacting

the ground or for breaking concrete, the barrel may have the driver head on the end thereof, the ram may be solid entering the open top of the barrel and impacting against the driver, the handle may be attached to the top of the ram and the recoil spring may be compressed between the top of the barrel and the top of the ram. For high level usage such as driving fence posts into the ground, the barrel may be hollow receiving the post therein, the ram may overlie the barrel with the handle attached thereto at a convenient operating level, and the recoil spring may be interposed between the top of the barrel and the top of the ram. The handle is preferably H-shaped with handle grips at the tops and bottoms of the vertical legs. Attachments may be provided to lock the barrel to the anchor, breaker tool or the like and for guiding a fence post in the hollow barrel.

3,735,823

IMPACT MOTIVE IMPLEMENT

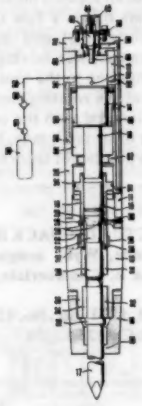
Hiromu Terada, Ikoma-gun, Nara, Japan, assignor to Nippon Pneumatic Manufacturing Co., Ltd., Osaka-shi, Japan

Filed Apr. 19, 1971, Ser. No. 13,522

Claims priority, application Japan, May 1, 1970, 45/38490; May, 1970, 45/38491

Int. Cl. B25d *9/00*

U.S. Cl. 173—119 3 Claims



An impact motive implement for a fluid impact tool or the like. The implement has a main body having an upper cylinder and a lower cylinder. An upper piston and a lower piston are fitted into the two cylinders and connected with a piston rod. An impact tool is disposed under the main body against the upper end of which the lower end of the lower piston strikes when the piston are lowered. A main valve opens and closes an oil inlet port and an oil outlet port leading to the oil chamber in the lower portion within the lower cylinder, and a limiting valve is moved by the upper piston as it rises. The operating portion of the main valve and the limiting valve are correlated so that the main valve will shut off the oil chamber and the oil inlet port and connect the oil chamber and the oil outlet port by feeding compressed high pressure gas in the upper chamber within the upper cylinder to the operating portion of the main valve when the limiting valve is moved by the upper piston, and the oil chamber and the oil inlet port are connected and the oil chamber and the oil outlet are shut off when the limiting valve is not moved by the upper piston, and when the oil chamber is connected with the oil inlet port, the lower piston is pressed upward by the pressure oil fed into the oil chamber.

3,735,824

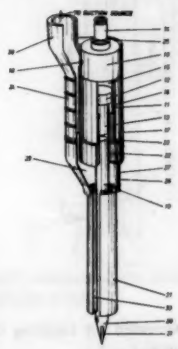
ARRANGEMENTS IN AND RELATING TO A CHISELLING HAMMER OR SIMILAR PERCUSSION MACHINE

Nils Osten Astrom, Bromma, Sweden, assignor to Devac AB, Vallingby, Sweden

Filed Mar. 3, 1971, Ser. No. 120,624

Int. Cl. E21b *21/00*; E21c *7/00*

U.S. Cl. 175—213 11 Claims



A chiselling hammer or similar percussion machine, having a pneumatic impact creating and/or vibration generating motor, a motor housing made of a vibration damping material, and a cutting tool provided with a casing structure also made of a vibration damping material and adapted for accommodation in a tool insert opening arranged in connection with the motor housing. Extending from one end of the casing structure to the other is at least one channel which forms a communicating passage between the working zone of the tool and an open through-flow passage within the machine housing proper.

3,735,825

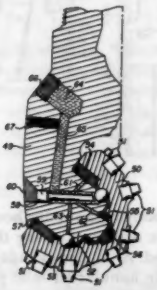
PRESSURE EQUALIZING SYSTEM FOR ROCK BITS

Wilbur Stanley Keller, Arlington, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Mar. 7, 1972, Ser. No. 232,378

Int. Cl. E21b *9/10*

U.S. Cl. 175—228 8 Claims



A lubricant reservoir is positioned in each arm of a three cone rotary rock bit to provide lubricant to bearings located between the bit's rotary cone cutters and the bearing shafts upon which the cutters rotate. A seal is positioned between the cutters and the bearing shafts to retain lubricant in the bearing area and to prevent borehole fluids and debris from entering the bearing area. A pressure equalizing passage provides communication between the lubricant reservoir and the outside of the bit. A two-way valve is positioned in the pressure equalizing passage to prevent excessive pressure dif-

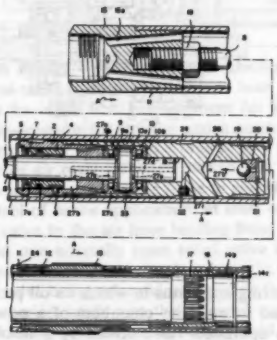
ferentials from building up between lubricant in the lubricant reservoir and fluid outside of the bit by allowing lubricant from the lubricant reservoir to escape to the outside of the bit and allowing fluid outside of the bit to enter the lubricant reservoir.

3,735,826

SEALED BEARING WITH HYDROSTATIC PRESSURE BALANCING FOR CORE BARRELS

Dorin Constantinescu; Sever Cruceanu; Eugen Spataru, and Nicolae Mereanu, all of Bucharest, Romania, assignors to IPCUP Institutul De Proiectari Si Cercetari Pentru Utilaj Petrolier, Bucharest, Romania

Filed June 17, 1971, Ser. No. 154,145
Int. Cl. E21b 9/20
U.S. Cl. 175—228 8 Claims



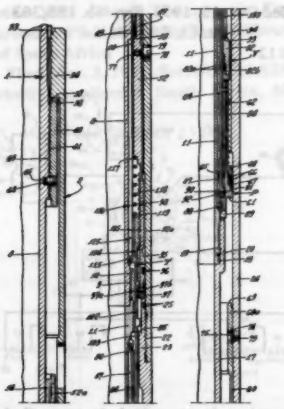
A coring device has an elongated tubular drill receiving a tubular core barrel which is mounted on the drill by a bearing and defines with the drill a drilling-fluid passage. The bearing is enclosed in a fluidtight lubrication compartment that must be protected from the drilling fluid. To this end one axial wall of the compartment is formed as a piston which can be displaced axially by a pressure differential between the lubrication compartment and the drilling-fluid passage to hydrostatically equalize the two pressures and prevent cross leakage.

3,735,827

DOWN-HOLE ADJUSTABLE HYDRAULIC FISHING JAR

William O. Berryman, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Mar. 15, 1972, Ser. No. 234,737
Int. Cl. E21b 1/06, 1/10
U.S. Cl. 175—296 40 Claims



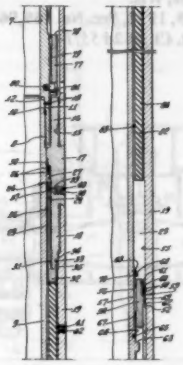
A down-hole adjustable hydraulic fishing jar for removing stuck objects from a well bore in which hydraulic fluid within a compression chamber by-passes a compression piston through an unrestricted flow passage normally closed by a valve. The valve is instantaneously opened by a trigger mechanism adjustable down-hole to vary the tension on the running-in string required to trigger the valve to the open position. The jar is operative repetitively in any selected adjusted condition.

3,735,828

ACCELERATOR FOR FISHING JARS

William O. Berryman, Houston, Tex., assignor to Baker Oil Tools, Inc., Los Angeles, Calif.

Filed Mar. 15, 1972, Ser. No. 234,736
Int. Cl. E21b 1/06, 1/10, 23/00
U.S. Cl. 175—299 17 Claims



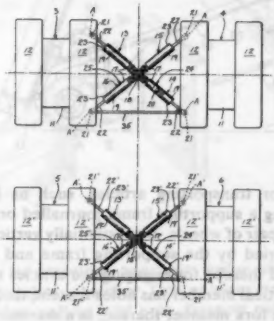
An accelerator for fishing jars for removing stuck objects from a well bore located above a drill collar string, the jar being located between a fishing tool and the drill collar string. A resiliently compressible body of rubber-like material is disposed in a pressure chamber in the accelerator containing a lubricating oil pressure transfer medium to apply pressure to all surfaces of the compressible body and reduce its volume when the fishing string is tensioned, the compressible body acting as a spring on expansion to accelerate the drill collar mass when the jar is released to produce the jarring action. The resilient material has a high impedance to the transmission of sound to improve jarring efficiency.

3,735,829

EXCAVATOR STEERING MECHANISM

Robert E. Talley, Racine, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Aug. 6, 1971, Ser. No. 169,748
Int. Cl. B62d 7/14
U.S. Cl. 180—9.44 3 Claims



A steering mechanism steers in pairs the four dual crawler trucks of a strip mining shovel by diagonally mounting steering

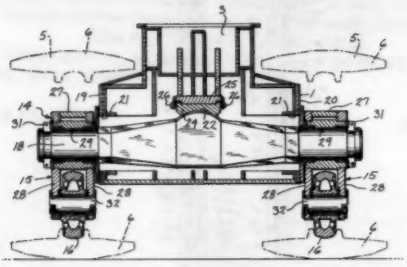
members between the two dual crawler trucks of each pair. In the first embodiment two powered double acting cylinders are diagonally end mounted in tandem to form each of the steering members. The second embodiment employs a pair of diagonally end mounted hydraulic rams. In a third embodiment each of the steering members is a pair of racks driven by a common pinion. In a fourth embodiment, a pair of cylinders mounting worm gears and having screws telescoped within them are diagonally mounted between a pair of dual crawler trucks.

3,735,830

EXCAVATOR CRAWLER MECHANISM

Robert E. Talley, Racine, Wis., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Aug. 9, 1971, Ser. No. 169,963
Int. Cl. B62d 55/14
U.S. Cl. 180—9.5 1 Claim



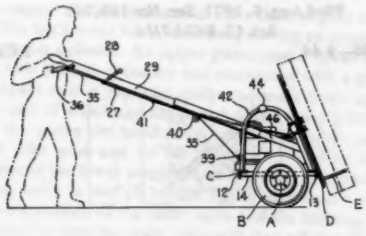
An endless track crawler mechanism has a plurality of bogie yokes that each contain a pair of rotatable bogie rollers and are pivotally mounted on two opposite sides of a chassis of said mechanism to support said chassis. At least two of said bodie yokes are affixed to said chassis by a bogie shaft56 that provides shaft limited vertical translation of said two bodie yokes.

3,735,831

ARTICLE TRANSPORTING DEVICE

Gary W. Gray, Route 2, Liberty, S.C.

Filed Aug. 3, 1971, Ser. No. 168,707
Int. Cl. B62d 51/04
U.S. Cl. 180—19 R 6 Claims



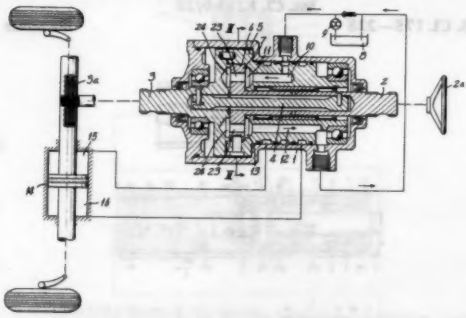
Apparatus fpr transporting articles, such as bundles of bricks, including a supporting frame journalled on axles carried between a pair of wheels. A substantially vertical member is pivotally carried by the supporting frame and has a fork member carried thereby for engaging the articles to be transported. The vertical member has holes therein, through which bolts secure the fork member thereto, in a manner so that the fork member can be rotated slightly for properly positioning the fork so the articles being transported. The vertical member can also be pivoted to properly lccate the articles relative to the for. The apparatus is powered by a gasoline operated motor.

3,735,832

POWER STEERING APPARATUS FOR A VEHICLE

Akira Akima, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Mar. 2, 1971, Ser. No. 120,164
Claims priority, application Japan, Mar. 3, 1970, 45/17632
Int. Cl. B62d 5/08
U.S. Cl. 180—79.2 R 1 Claim



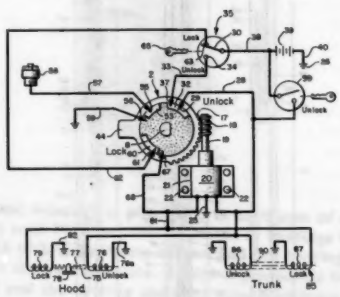
A power steering apparatus in which an oil pump is selectively connected to opposite chambers of a power steering cylinder by an operation valve driven by a steering handle. The operation valve comprises a rotary disk enclosed in a valve chamber having supply and return lines in one side surface thereof, the disk having fluid conducting openings in the form of through bores to connect the supply and return lines together in a neutral steering position, and to connect them respectively to the opposite chambers in the power steering cylinder in right and left steering positions. The opposite side surface of the valve chamber is formed with areas on which the oil acts which are symmetrical with the supply and return openings at the other side of the valve chamber and these areas are in communication with the supply and return openings via through bores in the rotary disk.

3,735,833

THEFT PREVENTION DEVICE FOR MOTOR VEHICLES

Joseph Sutkowski, 15600 Woodbrook Avenue, Maple Height, Ohio

Filed Oct. 12, 1971, Ser. No. 188,363
Int. Cl. B60r 25/04
U.S. Cl. 180—112 10 Claims



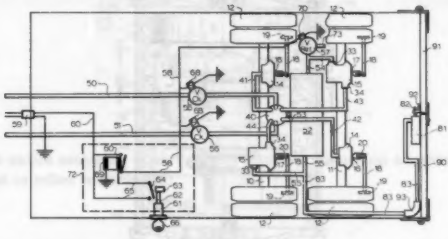
A theft prevention device which is controlled through a door lock wherein the operating components are connected in operating position when the door lock is open and in inoperative position when the door lock is locked.

3,735,834

VEHICLE ANTI-THEFT SYSTEM COMBINATION

Daniel A. St. Onge, Detroit, Mich., assignor to Charles Dale Brothers, Warren, Mich.

Filed Dec. 27, 1971, Ser. No. 212,366
Int. Cl. B60r 25/08
U.S. Cl. 180—112 3 Claims



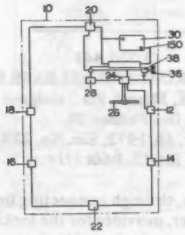
An anti-theft system combination for vehicles, especially trucks and semi-trailers, which includes at least one double brake cylinder having a first compartment for applying the brakes with air-pressure for driving and a second compartment for automatically applying the brakes with spring force in the absence of air pressure when parked; the presence of air-pressure overcoming the spring force to give the first compartment control of brake application; at least one normally closed check valve in the air lines leading from air pressure supply, at least one normally open relief valve in the brake system down stream from said check valves; the check valve and the relief valve being solenoid actuated to their non-normal conditions; wires leading to the solenoid controlling the valves; a self-locking normally open relay in said wires; and a key operated mechanism for closing the relay; the anti-theft system having a driving condition upon connection of air pressure to the air lines and EMF to the wires established by the driver using the key to close the relay whereupon the check valves are open allowing introduction of air pressure into the brake system and the relief valve is closed holding air pressure in the brake system; the anti-theft system having a non-driving condition upon the disconnection of EMF to the relay whereupon it opens and stays open allowing the relief valve to open to vent air pressure in the brake system whereupon the spring force of the air cylinder sets the brakes under spring force preventing movement of the vehicle and the check valve closes preventing the introduction of air pressure to overcome the spring force to release the brakes.

3,735,835

LOCKING MEANS

Lucien Antoine Yves Joseph Thomas, c/o Faylands Hotel, corner Clarendon Place & Claim Sts., Hillbrow, Transvaal, Republic of South Africa

Filed Mar. 3, 1971, Ser. No. 120,625
Claims priority, application South Africa, Mar. 4, 1970, 1453
Int. Cl. B60r 25/00
U.S. Cl. 180—114 10 Claims



This invention relates to a system whereby all the locks of an automobile are electromagnetic locks and all are controlled from a single selector mechanism. The electrical parts of the mechanism are contained in a weatherproof container. An emergency transformer is provided connected to at least some of the locks so that when a power source is connected to the transformer those locks will be opened.

3,735,836

OBSTETRIC STETHOSCOPE

David Littmann, Needham Township, Norfolk County, Mass., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 30,897, April 22, 1970, abandoned. This application July 21, 1971, Ser. No. 164,623
Int. Cl. A61b 7/02
U.S. Cl. 181—24 5 Claims

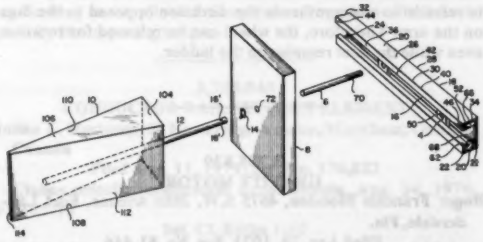
A light-weight obstetric stethoscope comprises, a binaural construction having a pair of legs and an interconnecting bight section, said legs being resiliently urged toward a normal untensioned position against deforming forces at least in part by the characteristics of the material of fabrication, the free ends of said legs forming ear tubes; ear plugs engaging said ear tubes; a tubular stem extending from said bight; and audio pickup means attached to said stem, whereby when said ear plugs are in the user's ears, said bight section is adapted to rest on the user's chin, said stem projecting outwardly therefrom.

3,735,837

ANECHOIC CHAMBER SYSTEM

John Duda, Dumont, N.J.; Stan Gelfman, Riverdale, and Arne Kaufman, Plainview, both of N.Y., assignors to Industrial Acoustics Company, Bronx, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,896
Int. Cl. E04b 1/82
U.S. Cl. 181—33 GE 11 Claims



A system for attaching anechoic wedge elements to the walls of an anechoic chamber. One or more struts are affixed to the chamber wall to hold nuts. Support rods are screwed into the nuts and partially covered with a mat of batting. Wedge elements are affixed to support tubes with spring-

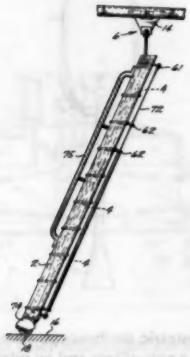
receiving slots therein. The tubes slide over the rods and are held by the springs, allowing easy installation of the wedge elements.

3,735,838

WHEELED LADDER WITH A WEIGHT ACTUATED SELF-LOCKING WHEEL THEREON

Jack W. Greenleaf, Snohomish, Wash., assignor to Everett Sound Machine Works, Inc., Everett, Wash.

Filed May 22, 1972, Ser. No. 255,623
Int. Cl. E06c *1/397, 7/48*
U.S. Cl. 182—15 11 Claims



The ladder is elevated above its supporting surface and has an arm pivotally mounted on the lower end portion thereof, which is yieldably biased in one angular direction thereof, into a stopped position on the ladder. The arm in turn has a surface engaging wheel thereon, which is rotatably mounted about an axis that is spaced apart from the pivotal axis of the arm, at a point on the arm at which the wheel supports the ladder above the surface in response to the bias on the arm. When the user's weight is added to the ladder, the wheel is restrained against rotation by an element which is disposed on the ladder so as to engage the wheel when the arm and the ladder are pivoted in relation to one another in the direction opposed to the bias on the arm. However, there are means on the ladder whereby the restrainer element can be disengaged from the wheel under the condition in which the element and the arm are displaced in relation to one another in the direction opposed to the bias on the arm. Therefore, the wheel can be released for rotation even while the user remains on the ladder.

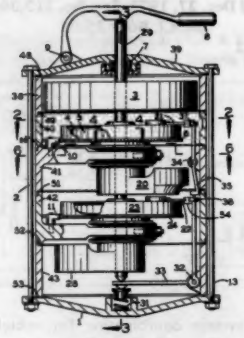
3,735,839

GRAVITY MOTOR

Roger Francois Moisdon, 4875 S.W. 28th Avenue, Fort Lauderdale, Fla.

Filed Apr. 28, 1971, Ser. No. 81,446
Int. Cl. F03g *3/00*
U.S. Cl. 185—29 5 Claims

A gravity motor having a vacuum body has a plurality of units each comprising an unbalanced weight and mechanical gear box, either direction of rotation of a reversible shaft being used to tighten mechanical energy accumulating means coupled to the shaft of said motor for subsequent release to rotate said shaft as an output shaft upon operation of manual actuating means, a flywheel being used as a rotation regulator.

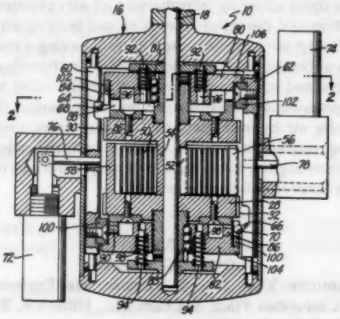


3,735,840

SPRING OPERATED ACTUATOR FOR OPENING AND CLOSING DOORS, OR THE LIKE

Willard W. Sheperd, Whittier, Calif., assignor to Shepherd Machinery Co., Los Angeles, Calif.

Filed Feb. 7, 1972, Ser. No. 223,882
Int. Cl. E05f *1/14*; F03g *1/08*
U.S. Cl. 185—39 7 Claims



A remotely controlled, spring operated actuator for opening and closing a door, or the like. The actuator spring is wound by manual opening and closing of the door. Remote controls selectively activate the actuator in directions to open and close the door.

3,735,841

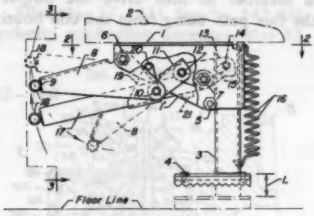
BRAKE LOCKING AND RELEASE SYSTEM

Nicholas A. Auriemma, Miami, Fla., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 10, 1972, Ser. No. 233,607
Int. Cl. B60t *1/14*
U.S. Cl. 188—5 4 Claims

A pivoted lever arm, through connecting linkage means to a pivoted rocker member, provides for the locking movement of a brake member. A second, alongside, lever arm provides for lifting the first said lever arm back to a brake released position. One embodiment uses extended rod members such that

there can be a foot operation for each pivoted lever arm and



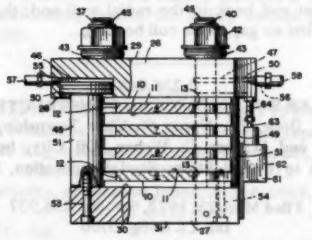
the entire assembly is particularly adapted for use on a serving cart or other rollable unit.

3,735,842

SPRING APPLIED, FLUID PRESSURE RELEASED LOCKING DEVICE

Edwin A. Spanke, Oak Forest, and Vincent J. Balunas, Jr., Chicago, both of Ill., assignors to U. S. Industries, Inc., New York, N.Y.

Filed Apr. 8, 1971, Ser. No. 132,445
Int. Cl. B65h *59/10*
U.S. Cl. 188—67 6 Claims



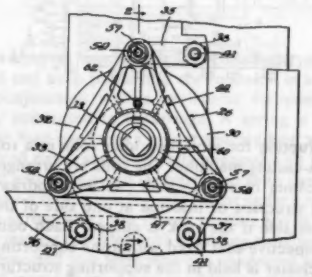
A locking device for preventing accidental movement of a member and embodying elongated supporting members, with a unit comprised of a plurality of plates mounted on the supporting members and movable to be disposed in clamped and released relation thereto.

3,735,843

DISC BRAKE STRUCTURE

Chester M. Wilg, Lincolnwood, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Sept. 10, 1971, Ser. No. 179,318
Int. Cl. F16d *65/20*
U.S. Cl. 188—72.1 5 Claims



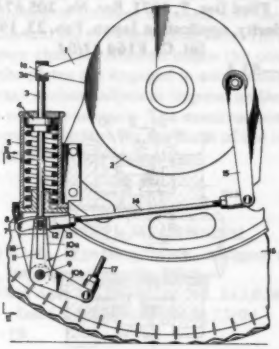
The present brake device, primarily designed for intermittently rotating shafts, includes a pair of stationary pressure brake plates located on respective sides of a hub member fixed to the shaft. The pressure brake plates are anchored by link elements one of which is disposed at right angles to the remaining link elements to secure a non-rotatable but stable mounting of the brake plates. The hub member carries a plurality of replaceable friction brake inserts and the pressure brake plates are resiliently clamped into friction contact with the hub member which is located therebetween by a plurality of bolt and coil spring combinations carried in turn by one of the brake plates and by a face plate adapted to have contact with the other brake plate. By means of an adjusting nut the clamping pressure of the bolt and coil spring combinations can be adjusted.

3,735,844

VEHICLE BRAKING SYSTEMS

Hamilton Nigel Barnes, Sevenoaks, England, assignor to Minister of Technology in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sept. 11, 1970, Ser. No. 71,295
Claims priority, application Great Britain, Sept. 12, 1969, 45141/69
Int. Cl. B60t *8/00*
U.S. Cl. 188—181 T 7 Claims



A vehicle braking system incorporates a shoe carrier or back plate mounted for limited rotation relative to the vehicle chassis and to which a torque is applied, during braking, in opposition to that applied by the braking force in conjunction with the adhesion between the associated road wheel and the ground, which opposing torque rotates the back plate when the road adhesion is reduced by the incidence of slip. The back plate acts as a sensor for a mechanism, which may be hydraulic, pneumatic or mechanical, for reducing the braking force to restore adhesion, which mechanism is preloaded during braking and is allowed to operate on rotation of the back plate by the opposing torque.

3,735,845

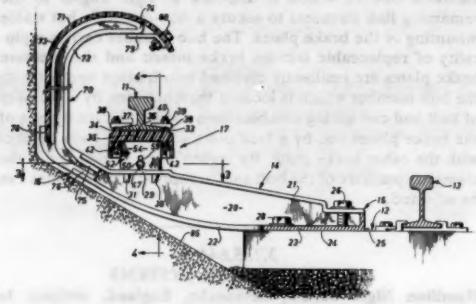
CONDUCTOR RAIL SUPPORT ELEMENT

Johan L. Harmsen, 68 Hawkridge Avenue, Markham, Ontario, Canada

Filed Aug. 11, 1971, Ser. No. 170,823
Claims priority, application Great Britain, Aug. 24, 1970, 91,381/70
Int. Cl. B60m *1/30*
U.S. Cl. 191—32 6 Claims

A support structure for supporting a conductor rail and especially useful in subway systems in which stringent space restrictions exist includes an electrically insulated conductor rail-supporting seat and an electrically conductive seat-supporting arm. The latter is secured to one end of a rail tie to extend laterally outwardly and obliquely upwardly therefrom

while the rail-supporting seat is mounted on that arm for adjustment of its position in both the vertical and lateral directions.

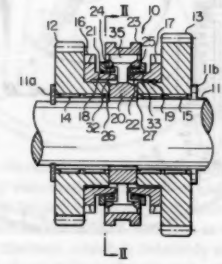


3,735,846

SYNCHRONIZING MECHANISM OF POWER TRANSMISSION

Kazuyoshi Hiralwa, Tachikawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 7, 1971, Ser. No. 205,674
Claims priority, application Japan, Feb. 23, 1971, 46/8372
Int. Cl. F16d *23/04*
U.S. Cl. 192—53 A 1 Claim



An improved synchronizing mechanism for a synchro-mesh power transmission is disclosed, having a cee spring having spaced end portions between which a land of the synchronizing ring and one of axial extensions of a sleeve bearing are loosely received. When a sleeve is axially moved by a gear shifting unit of the power transmission, the cee spring is forced to expand by a rotational force imparted to the synchronizing ring so that the synchronizing ring is driven in synchronism with the gear of the rotary shaft of the transmission.

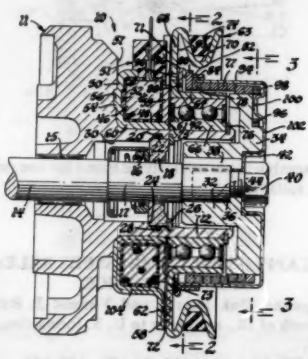
3,735,847

ELECTROMAGNETIC SPRING-WOUND CLUTCH

Byron L. Brucken, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 20, 1972, Ser. No. 236,022
Int. Cl. F16d *27/10, 41/20, 3/12*
U.S. Cl. 192—35 8 Claims

The drawings illustrate an electromagnetic spring-wound clutch wherein an input pulley hub member is axially aligned with an output shaft hub member, and both are surrounded by a coil-wound spring having one end thereof secured to the output shaft hub member. A flanged clutch armature ring is mounted around and adjacent the other end of the spring, with a bent-end tab of the spring extending through a slot formed in the armature ring. When the armature ring is drawn into frictional contact with a radial wall formed on the input pulley hub member by an adjacent energized electromagnetic coil, the bent tab is caused to rotate with the armature ring, in turn, causing the spring to wrap around and grippingly engage the pulley hub member to thus drive the output shaft hub member, the flux path being from the coil housing across a first air gap to the radial pulley wall and, as a result of a circumferential slot formed in the radial wall, across a second variable air gap into the armature ring around the circumferential slot and back to the radial wall and, thence, back across the first air gap to the coil housing.

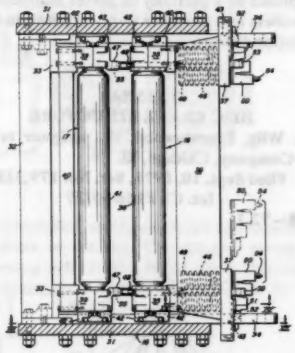


3,735,848

IDLER ROLL MOUNTING CONSTRUCTION

Charles H. Bode, Jr., Upper St. Clair Township, Allegheny County, and Wilmer C. Wrhen, Oil City, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 22, 1972, Ser. No. 236,937
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 R 9 Claims



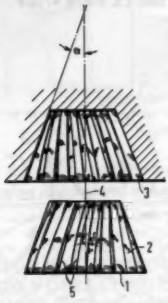
A construction for mounting idler rolls in a roll-rack of a continuous-casting machine. The rolls are arranged in sets of top and bottom clusters, which can be withdrawn from the supporting structure or inserted at one side of the roll rack, the concave side if the rack is curved. Each bottom cluster rests on respective seat fixed within the supporting structure. Each top cluster is held in the supporting structure with keys which are received in openings in straps. Both top and bottom clusters have legs engageable by an extractor for withdrawing or inserting them.

3,735,849

COUPLING ELEMENT FOR A CONE COUPLING

Manfred Lutz, Schweinfurt, Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 17, 1971, Ser. No. 143,931
Claims priority, application Germany, May 23, 1970, P 20 25 197.2
Int. Cl. F16d 13/60
U.S. Cl. 192—108 2 Claims



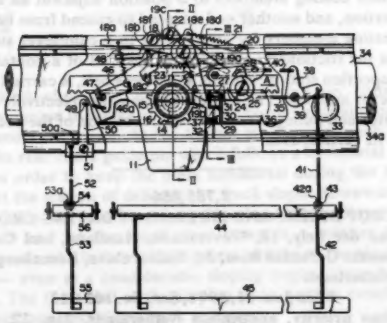
A male, conical coupling element for a cone coupling having spiraling external ribs can be produced by forging or cold pressing without turning the forming die during shaping or during the withdrawal of the shaped element if the element and the conforming female die satisfy certain geometrical requirements.

3,735,850

REPEAT SPACING MECHANISM FOR TYPEWRITERS

Tomoyoshi Watanabe, Hekikai-gun, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed Aug. 4, 1970, Ser. No. 60,911
Claims priority, application Japan, Aug. 4, 1969, 44/61916
Int. Cl. B41j 19/00
U.S. Cl. 197—82 1 Claim



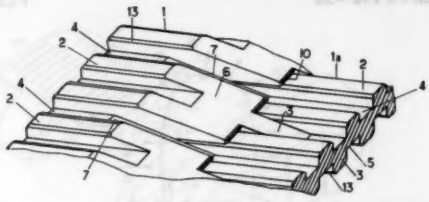
A repeat spacing mechanism for a manual typewriter includes feed and keep pawls that are rotatable in a horizontal plane in conjunction with a horizontal escapement wheel operatively connected to a carriage. A spring is interposed between the feed pawl and a repeat spacing key, wherein the keep and feed pawls are alternately engaged with the escapement wheel and disengaged therefrom so as to cause the carriage to make a repeat spacing movement under control of the bias of the spring while the repeat spacing key is depressed. The spring may be provided with a holding member that is adjustably connected to a lever which is connected to and actuated by said repeat spacing key. In addition, an inertia increasing member may be secured to an end of one of said pawls.

3,735,851

PLATE FOR CONVEYORS EMPLOYING SLIDING PLATES

Pierre Patin, 58 rue de Sevres, 92 Boulogne-sur-Seine, France

Filed July 8, 1971, Ser. No. 160,759
Int. Cl. A63g 1/00; B66b 9/12
U.S. Cl. 198—16 R 3 Claims



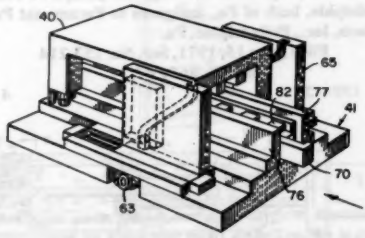
A plate for conveyors employing sliding plates has longitudinal ribs and grooves on its upper face and on at least one terminal portion of its lower face for sliding in the grooves and on the ribs of the upper face of the adjacent lower plate. The grooves of the lower face are directly beneath the ribs of the upper face. The upper part of the plate above the lower terminal portion has a top chamfer so that the top chamfer above the lower plate forms a continuous surface for each of two successive upper ribs and a lower rib which they straddle. Each upper groove is situated between two successive continuous surfaces and the corresponding lower rib terminates in a common lower chamfer situated below the continuous surfaces so that the plates are engaged in each other while forming a horizontal surface adjacent ingress and/or egress stationary rakes of the conveyor. The construction provides in every two grooves a passage for the teeth of the rakes through these plates above their lower chamfers.

3,735,852

TRANSFER MECHANISM

Thomas A. O'Keefe, Wyoming, Mich., assignor to Northwest Tool & Die, Inc., Grand Rapids, Mich.

Filed Apr. 11, 1972, Ser. No. 243,026
Int. Cl. B23q 5/22; B65g 25/04
U.S. Cl. 198—19 7 Claims

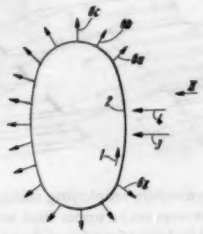


A transfer mechanism is adapted for inclusion in conventional die assemblies operated by reciprocating presses. A cam-actuated drive mechanism induces transferring movement of an assembly having a lost-motion interconnection between certain components, and this lost-motion is utilized to induce a cam-controlled lifting-retracting action at the opposite extremes of a normally horizontal transferring movement. The lifting and carrying component is embraced by a member establishing a vertical guideway, and these two members move together horizontally. A second set of these members, connected in sequence, provides movement of the mechanism in three successive dimensions.

3,735,853
SYSTEM FOR DISTRIBUTING PIECES OF LOAD SUCH AS BAGGAGE, PARCELS ETC.

Gerhard Lingg; Norbert Gottstein, and Joachim Rostock, all of 6906 Leimen, Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Mar. 1, 1972, Ser. No. 230,612
Int. Cl. B65g 47/04
U.S. Cl. 198—20 7 Claims

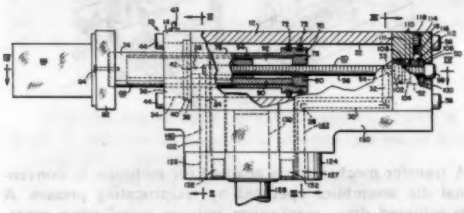


In a system for distributing pieces of load such as baggage, parcels etc., for example, among different destination points in an airport baggage handling system, using a closed loop conveyor system and loading and unloading stations, arranged along the loop. The conveyor system includes a plurality of individual carriages wherein some of the carriages have fixed level, load carrying platform, each followed directly by at least one carriage having liftable load carrying platform, forming therewith a group, whereby the number of carriages per group is equal to the number of loading stations; a first leading station is constructed for loading the fixed level carriages from a relatively low level, and the remaining loading stations are constructed for loading the liftable carriages when lifted to a higher level, selected for permitted passage of unlifted load carrying carriages. Each loading station includes a selectively operable loading belt, extending parallel to the direction of carriage movement at the respective loading station and being speed-synchronized with the carriages and at least one carriage per group is not loaded by any individual loading station.

3,735,854
FLUID PRESSURE MOTOR WITH EXTENSIBLE AND RETRACTABLE PART

Richard Hirsch, Plymouth Meeting, and Joseph F. Tomezsko, Philadelphia, both of Pa., assignors to Paramount Precision Products, Inc., Philadelphia, Pa.

Filed June 15, 1971, Ser. No. 153,214
Int. Cl. B65g 47/24
U.S. Cl. 198—24 4 Claims

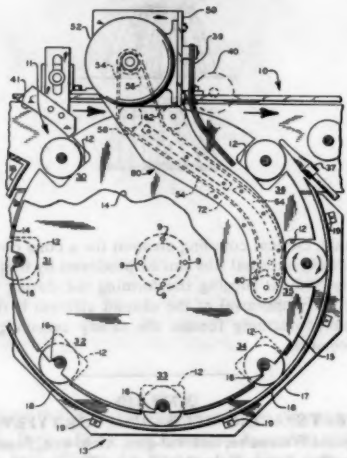


A fluid pressure motor is mounted at the head of a vertically extending shaft for being oscillated or turned forth and back thereby about the axis of the shaft. The motor is provided with a part extensible and retractable laterally of the shaft. The axis of the shaft is coincident with the line of intersection of a plane extending longitudinally of the fluid pressure motor and a plane extending transversely thereof. The weight of the fluid pressure motor on one side of either of said planes substantially balances the weight of the fluid pressure motor on the other side of the plane.

3,735,855
CONTAINER ROTATING APPARATUS

John R. Johnson, and Benjamin Mercer, Jr., both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 28, 1970, Ser. No. 102,006
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AB 7 Claims



Apparatus for selectively rotating a container restrained between spaced nesting elements at an inspection station is disclosed. The preferred embodiment includes a cantilever member having one end adapted for insertion between spaced container nesting members to a position adjacent an inspection station, and another end adapted to extend from between the nesting members for attachment to a cantilever support. Means for frictionally engaging a side wall of a container at the inspection station, such as an endless belt, is carried by the cantilever member. The endless belt may be selectively driven by motor and pulley means to impart rotation of the container about its vertical axis.

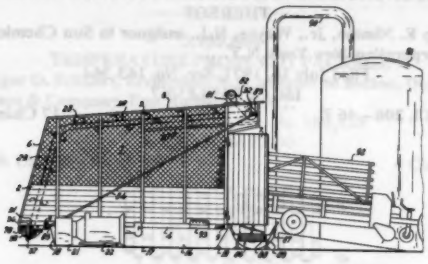
3,735,856
CROP DRIERS AND METHOD OF DRYING CROP

Ary van der Lely, 10, Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36, Esdoornlaan, Rozenburg, both of Netherlands

Filed Jan. 11, 1971, Ser. No. 105,213
Claims priority, application Netherlands, Jan. 12, 1970, 7000329
Int. Cl. B65g 17/20
U.S. Cl. 198—58 46 Claims

A crop drier in a defined space having an endless conveyor with a series of hooks which is disposed near the rear of the space in an inclined portion and along the top of the space in a horizontal portion. The relative disposition of the hooks is controlled so that near the transition from the inclined portion to the horizontal portion they are maintained in the same operative position relative to the defined space and they are caused to disengage crop at two or more selectable locations in the horizontal transit. The floor of the space is movable and heated air moves upwardly through the floor from a space under the floor. In operation, the crop in the space is circulated by the conveyor and moving floor and the thickness of

the crop is maintained between 50 and 120 cms with the crop



thickness divided by the product of the length of the crop and heated air pressure being maintained at a constant value.

3,735,857

MECHANISM FOR DELIVERING GOODS FROM CONTINUOUSLY OPERATING CHOCOLATE MOULDING PLANTS

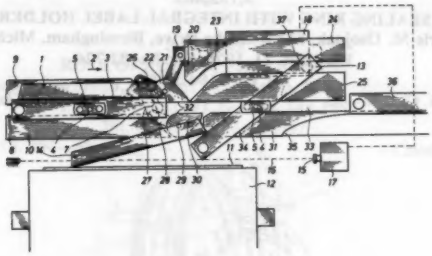
Kai Christian Sophus Aasted, Skovgardsvej 41, Charlottenlund, Denmark

Filed Jan. 26, 1971, Ser. No. 109,912

Claims priority, application Denmark, Jan. 30, 1970, 453/70

Int. Cl. B65g *17/00*

U.S. Cl. 198—155 **2 Claims**



Moulded chocolate slabs are transported on conveyor plates mounted in pivots on to parallel conveyor chains having equal and even speed. At the known mechanisms each plate has at its rear end a guide pin which follows a horizontal fixed track in order to keep the plate horizontal during the transport. At the station of delivery the track slopes downwards to tilt the plate. By attaching the guide pin at the leading end of the plate and let the track slope upwards a quicker tilting movement and a better safety against locking of the pin in the track — even at a considerable sloping angle — can be obtained. The front end of the sloping track portion consists of two simultaneously tilted track sections.

3,735,858

CHAIN FOR GRATE CONVEYOR OR THE LIKE

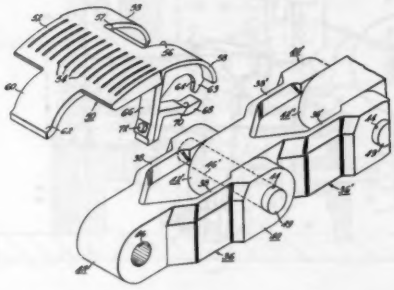
Walter J. Hartwig, Oconomowoc, Wis., assignor to Allis Chalmers Corporation, Milwaukee, Wis.

Filed Sept. 1, 1971, Ser. No. 176,850

Int. Cl. B65g *15/30*

U.S. Cl. 198—195 **8 Claims**

A two-piece chain link assembly and a chain for a grate conveyor or the like formed by a plurality of such two-piece chain link assemblies connected together. Each two-piece chain link assembly comprises a "chain link proper" which includes a yoke at one end and a neck at the opposite end, the neck of one "chain link proper" being received by and pivotally connected to the yoke of a contiguous chain link proper. A nonintegral separate cover member having gas passage slots or apertures therein is provided in overlying relation to each chain link proper, each cover member including at one end thereof projecting lips which are pivotally connected to a pivotal support moving with the conveyor such as a pipe spacer lying on



the same transverse axis of the grate conveyor as the pivotal axis of the connection between the corresponding chain link proper and a contiguous chain link proper. The other end of each cover member includes a tail portion having a part thereof which underlies an end of the cover member of a contiguous chain link assembly.

3,735,859

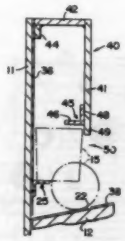
CENTRIFUGAL PARTS FEEDER AND METHOD

Paul Marcus Miller, Largo, Fla., assignor to Tangen Drives, Inc., Clearwater, Fla.

Filed May 21, 1971, Ser. No. 145,632

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 BC **12 Claims**



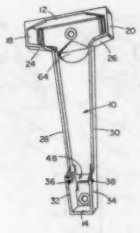
A centrifugal parts feeder having a conical central driven rotor surrounded by a circular bowl wall. Tooling is provided for the feeding of cylindrical parts particularly where the length exceeds the diameter. A bowl plow spaced from the bowl wall at a distance slightly greater than the diameter of the parts accomplishes the first alignment and then delivers the parts to an elevating plow and thereafter to a corner trap which diagonally engages the vertically oriented cylindrical parts and delivers the same to a reject discharge where the horizontal parts are dropped and recirculated. A turning chute is optionally provided where the parts are to be delivered with the axis horizontally oriented. A trip finger is provided at a point downstream from the bowl plow to orient parts which are tipped. The method contemplates the steps of confining the cylindrical parts for single file movement, positively confining the parts to be delivered, elevating the same, and then rejecting those parts which are not elevated and confined.

3,735,860

ARTICLE HOLDER

Warren I. Nissen, Topsfield, and Richard J. Petrillo, Norwell, both of Mass., assignors to The Gillette Company, Boston, Mass.

Filed May 17, 1971, Ser. No. 143,959
Int. Cl. B65d 85/54
U.S. Cl. 206—16 A 14 Claims



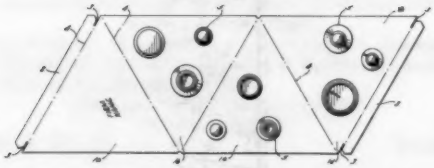
A one piece molded plastic holder for a safety razor has a base including support surface portions for the head and handle of the razor, a first stop structure at one end of the base for limiting longitudinal movement of the razor in one direction, a second stop structure at the opposite end of the base for limiting longitudinal movement of the razor in the opposite direction, resilient means connecting one of the stop structures to the base, first securing means for securing the razor head in the holder, and second securing means for securing the razor handle in the holder.

3,735,861

CONVERTIBLE SHIPPING AND DISPLAY PACKING DEVICE

Harvey Wallach, 29 Gun Lane, Levittown, N.Y.

Filed Mar. 23, 1971, Ser. No. 127,236
Int. Cl. B65d 5/44, 5/00
U.S. Cl. 206—45.11 7 Claims



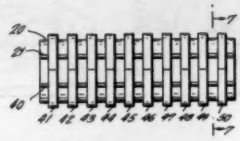
A substantially rigid sheet-material body is elongated and subdivided by transversely extending fold lines so as to form connected plate portions of triangular shape which can be folded along the fold lines. The bases of alternate ones of the plate portions are located at one lateral margin of the elongated strip-shaped sheet material body, and the bases of the remaining plate portions are located at the other lateral margin. The two terminal plate portions have at their free edges foldable flaps. The body can be folded in one direction about the respective fold lines so that it forms a pyramidal package and surrounds objects which are secured on that major surface or side of the body which is folded inwardly. The body can, also be folded to the opposite direction so that the first mentioned side carrying these objects will be exposed at the exterior and objects mounted thereon will be exposed for viewing. A rubber band or similar means engages the foldable flaps and retains them releasably in overlying relationship so that the body can be releasably retained in one or the other pyramidal configuration.

3,735,862

RIBBON PACKAGE AND PROCESS FOR PRODUCTION THEREOF

Philip E. Nimmo, Jr., Wayne, N.J., assignor to Sun Chemical Corporation, New York, N.Y.

Filed July 16, 1971, Ser. No. 163,364
Int. Cl. B65d 85/67
U.S. Cl. 206—46 Z 17 Claims



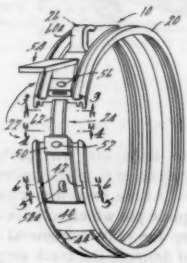
A ribbon package is formed of a plurality of spaced reels of ribbon wound on a cardboard tube. The inner end of each ribbon reel is secured to the tube by an adhesive strip or a line of adhesive applied in a hot melt state. The end of the last convolution of each ribbon reel is secured to its next inner convolution by a similar adhesive strip. The cardboard tube ends then receive plastic end caps and a label is placed on the ribbon reel surface. A transparent heat shrink plastic tube then receives this assemblage and overlaps the tube ends, and heat is applied to shrink the film tightly over the ribbon reels and around the outer sides of the caps to hold in position the outer caps and label, and to form a protective covering for the ribbon reels.

3,735,863

SEALING RING WITH INTEGRAL LABEL HOLDER

Boris M. Osojnak, 512 Roanoke Drive, Birmingham, Mich.

Filed Oct. 21, 1970, Ser. No. 82,726
Int. Cl. B65d 85/67
U.S. Cl. 206—53 8 Claims



A sealing ring for use with a reel of the type including a central spool and spaced flanges and wherein the sealing ring comprises a strip of flexible material adapted to be formed into a loop to encircle the reel and coacting latch means on the respective free ends of the loop operative to draw the free ends together to form a closed loop sealingly encircling the reel. The strip is formed as a continuous polyethelene extrusion of constant cross section and includes a main body portion of generally rectangular cross section, integral circumferentially extending ribs on the radially inner face of the main body portion adapted to fit within the spaced reel flanges, and a pair of spaced, integral circumferentially extending lip portions on the opposite side edges of the radially outer face of the main body portion. Each lip portion,in cross section, extends radially outwardly away from the radially outer face of the main body portion and then bends over toward the other lip portion to define a continuous inwardly opening groove extending around the strip and coacting with the confronting groove defined by the other lip portion to define a continuous, integral label holder on the radially outer face of the main

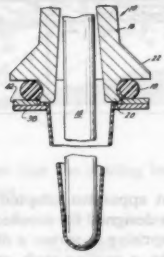
body portion for selective receipt of a label at any circumferential location along the strip.

3,735,864

TEMPERATURE PROBE COT PACKAGE

Edgar O. Eckhart, Livingston, N.J., assignor to Becton, Dickinson & Company, East Rutherford, N.J.

Filed Sept. 27, 1971, Ser. No. 184,129
Int. Cl. B65d *73/00*
U.S. Cl. 206—56 AC **4 Claims**



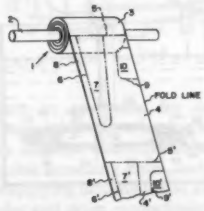
An improved package for holding a plurality of electronic thermometer cots or the like in position for simplified removal is provided. The package includes a flat, two-ply sheet formed of relatively rigid cardboard stock. A plurality of holes extend through the sheet with the openings through the top ply being slightly larger than the corresponding openings through the bottom ply.

3,735,865

ROLL OF PLASTIC FILM APRONS

Buford Bryan Smith, P.O. Box 567, Paxton, Ill.

Filed May 17, 1971, Ser. No. 144,154
Int. Cl. B65d *85/66, 85/67*
U.S. Cl. 206—58 **4 Claims**



Disposable plastic film aprons are prepared from strip material folded longitudinally and the folded film strip packaged in roll form and perforated to provide a plurality of readily separable aprons. The plastic film strip has a plurality of perforations extending transversely thereof to separate one apron from the next on said strip and perforations defining straps positioned on opposite sides of each apron extending longitudinally thereof to provide tie straps operable to be tied around of the neck of the user and perforations extending from said longitudinal fold to define a neck opening.

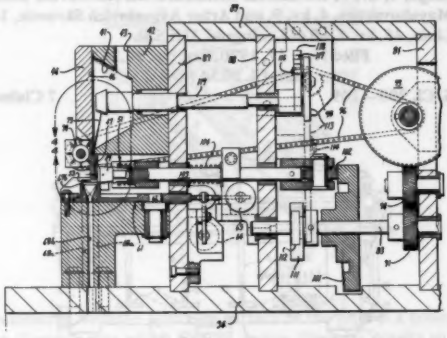
3,735,866

COMPUTER CORE HANDLER

Richard Bower, Northridge, Calif., assignor to E. H. Research Laboratories, Inc., Oakland, Calif.

Filed Apr. 29, 1971, Ser. No. 138,718
Int. Cl. B07c *1/04*
U.S. Cl. 209—73 **10 Claims**

A computer core handler having a bowl for receiving and holding untested cores and a vertical chute for receiving cores from the bowl and guiding them to a test station where the cores are speared by a test probe. The cores are allowed to drop into a selector which guides the core into a selected one



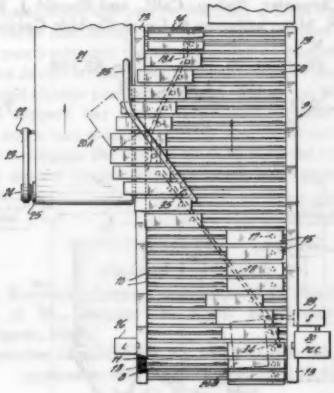
of a plurality of core reservoirs depending upon the test results. A moving brush moves the cores in the bowl into the chute and another rotating brush urges the cores downwardly along the chute to the test station.

3,735,867

ARTICLE CONVEYOR WITH LATERAL SWITCHING MECHANISM

Frank B. Vanderhoof, Lake Forest, and Robert Dederer, Boonton Township, Morris County, both of N.J., assignors to Metramatic Corp., Landing, N.J.

Filed July 21, 1972, Ser. No. 273,938
Int. Cl. B07c ; B41j *7/30*
U.S. Cl. 209—74 R **7 Claims**



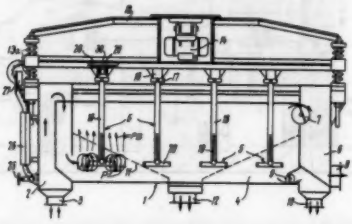
A conveyor having a plurality of plate-like article carriers for supporting a series of articles or article containers. A scanning means detects specific containers and diverts them to one side of the conveyor where they may be picked up by a second conveyor and removed to a storage position. A lateral extension of each plate-like carrier permits the movement of the articles across the conveyor and onto a second conveyor.

3,735,868

FLOTATION MACHINE WITH VERTICALLY RECIPROCATING AERATORS

Alexandr Mikhailovich Fedotov, Bolshoi prospekt, 58/17, kv. 34; Evgeny Stepanovich Alexeev, Belgradskaya ulitsa, 44, kv. 97; Genrikh Alexandrovich Denisov, ulitsa Mayakovskogo, 4, kv. 9; Konstantin Alexandrovich Rundkvist, ulitsa Mayakovskogo, 4, kv. 9, and Artur Avgustovich Skrunde, 14 Linia, 45, kv. 4, all of Leningrad, U.S.S.R.

Filed Nov. 17, 1970, Ser. No. 90,261
Int. Cl. B03d 1/22
U.S. Cl. 209—169 7 Claims



A flotation machine incorporating a chamber for pulp and means for removing therefrom separated products, as well as vibration aerators disposed therein and having ducts for the supply of air to their piston-like portions having openings for the outlet of said air and openings for the passage of pulp during the upward stroke of the aerators.

The piston-like portion of each aerator is provided with flaps of elastic material adapted to close the openings for the passage of pulp in the course of the aerator downward stroke and open them in the course of the aerator upward stroke.

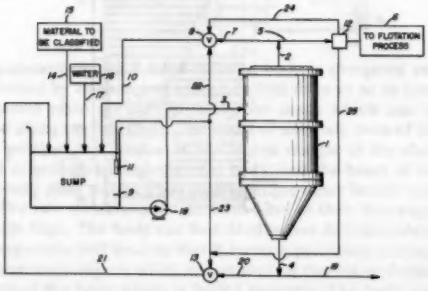
As a result of such an arrangement, the operation of the machine is accompanied with an intensive stirring and aeration of pulp at low values of the vibrational speed of the aerator, owing to which there takes place a considerable reduction of the electric energy consumption and aerator wear.

3,735,869

CYCLONE PARTICLE SEPARATOR

Robert D. Carpenter, Bishop, Calif., and Ronald J. Roman, Socorro, N. Mex., assignors to Union Carbide Corporation, New York, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,108
Int. Cl. B04c 5/30
U.S. Cl. 209—211 7 Claims



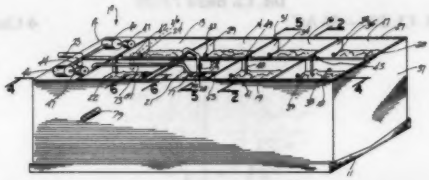
A process and cyclone apparatus for the separation of particles within a liquified medium into fine and coarse particle solutions whereby the density of the fine particle solution is varied by means of recycling a portion of the fine and/or coarse particle slurry back into the input liquified medium.

3,735,870

ACTIVATED SLUDGE PLANT

Rupert H. Uden, Prosser, Nebr.

Filed Aug. 12, 1971, Ser. No. 171,060
Int. Cl. B01d 21/10
U.S. Cl. 210—138 11 Claims



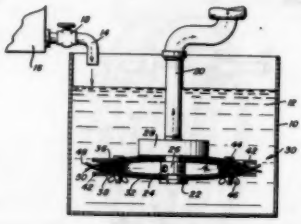
A sewage treatment apparatus adapted to handle sewage loading, the apparatus designed for aerobic decomposition of fresh sewage and comprising in series: a digester tank, a plurality of aeration tanks, a settling tank, and a final aeration tank, wherein a raw sewage influent passes through an activated sludge process and is discharged as a purified water effluent.

3,735,871

FILTER JACKET FOR COOKING OIL

Joseph P. Bisko, Pacifica, Calif., assignor to John Christopher, Bradley and Edward A. McIntire, Kankakee, Ill., part interest to each

Filed Sept. 23, 1970, Ser. No. 74,717
Int. Cl. B01d 25/04
U.S. Cl. 210—167 2 Claims



A jacket of cloth for a paper and wire mesh filtering assembly presently employed for cleaning fried food cooking oil which enables cleaning of the filter assembly by scraping the surface of the filter jacket thus prolonging the effective life of the filtering assembly and reducing the time required to clean and replace the filter components.

3,735,872

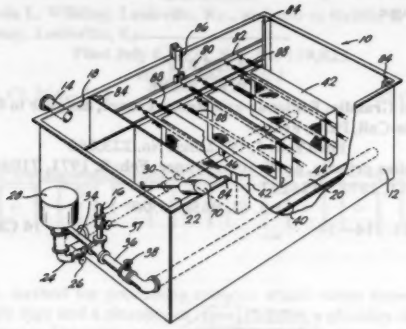
FILTER SYSTEM

Marvin H. Anderson, 3382 S. Florence Court, Denver, Colo.

Division of Ser. No. 826,812, May 22, 1969, abandoned. This application July 12, 1971, Ser. No. 161,852
Int. Cl. B01d 23/26, 37/02, 35/00
U.S. Cl. 210—167 4 Claims

A filter system for fluids consisting of a tank in which a plurality of filter units are mounted relative to a recirculation header such that recoating of the filter units with diatomaceous earth is facilitated. The header is operable to provide a high velocity fluid vortex in the tank which is con-

trollable to provide for a coating of each filter unit with size



classified particles so that the coating becomes progressively coarser as it continues.

3,735,873

APPARATUS FOR SCREENING AQUEOUS SUSPENSIONS, PREFERABLY FIBER STOCK AND/OR FIBER-PULP SUSPENSIONS

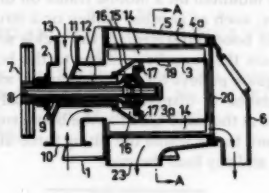
Karl Erik Bergstedt, 86100 Timra, Sweden, assignor to Sunds Aktiebolag, Sundsvall, Sweden

Filed June 2, 1970, Ser. No. 42,675

Claims priority, application Sweden, June 10, 1969, 8264/69

Int. Cl. B01d *29/42*

U.S. Cl. 210—415 **7 Claims**



An improvement in apparatus for screening aqueous suspensions and being of the type having a perforated, diluting-liquid cylinder adapted to rotate inside a co-axial, perforated, non-rotatable screening drum, and with which means are provided for supplying diluting liquid and suspension mixtures to the cylinder and drum respectively, the improvement being that the means which causes the diluting cylinder to rotate is at least partially enclosed by the means supplying said liquid to the cylinder and that means are provided for imparting to the liquid, prior to its entry into said cylinder, a determined speed of rotation, thereby preventing uneven distribution in the apparatus of the suspended material.

3,735,874

VALVE AND FILTER ASSEMBLY

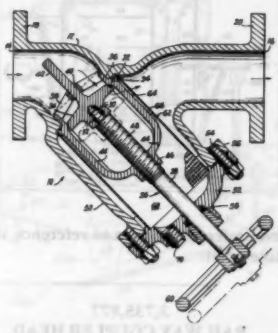
Bernard Steinman, New York, N.Y., assignor to Mueller Steam Specialty Division of SOS Consolidated Inc., Brooklyn, N.Y.

Filed Aug. 11, 1971, Ser. No. 170,802

Int. Cl. B01d *35/02*

U.S. Cl. 210—430 **9 Claims**

A valve and filter assembly. The assembly has an elongated tubular structure defining a path of fluid flow and this tubular structure carries between its ends a valve seat surrounding the path of fluid flow. A valve member coacts with the valve seat and is moved to and from a closed position engaging the valve seat for controlling the fluid flow. A filter extends across the interior of the tubular structure for filtering the fluid flowing therethrough, and this filter has an upstream surface toward which the fluid flows and a downstream surface away from which the fluid flows after passing through the filter. In communication with the upstream surface of the filter is a collecting chamber into which filtered matter drops by gravity so as to be collected at a location beyond the path of fluid flow.



3,735,875

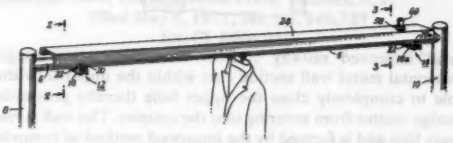
SECURITY DEVICE FOR CLOTHES RACKS

Vincent Parillo, Highland Park, N.J., assignor to Bond Stores, Incorporated, New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,268

Int. Cl. E05b *73/00*

U.S. Cl. 211—7 **1 Claim**



This application for patent discloses a security device for clothes racks commonly employed in retail stores for the display of men's suits and the like arranged on hangers in a show case. The device is composed of three principal parts, a pair of hanger rail clamps permanently attached to the hanger rail, a channel support bar which is pivotedly connected to the clamps and a tray member slidably supported on the bar and adapted to engage the clamps so as to hold the bar in locked position against clothes hangers which are supported by the rail.

3,735,876

CRANE CONTROLS

Roy D. Brownell, Aurora, and Richard E. Rogers, Oswego, both of Ill., assignors to Clark Equipment Company, Buchanon, Mich.

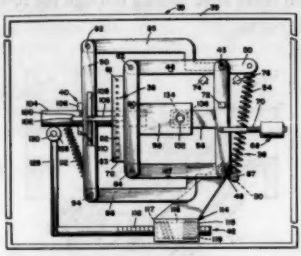
Continuation-in-part of Ser. No. 794,042, Jan. 27, 1969. This application Mar. 1, 1971, Ser. No. 119,663

Int. Cl. B66c *13/48*

U.S. Cl. 212—39 R **10 Claims**

A control for a crane boom mounted on a self-propelled vehicle for pivotable movement about vertical and horizontal axes, the control including first control means for controlling boom movement about a horizontal axis and second control means for controlling boom extension. Connecting means cooperating with said first and second control means are provided for actuating one of said first and second control means upon actuation of the other to maintain the free end of the boom in a predetermined vertical or horizontal plane. Vehicle

orientation compensating means also may be included, as well as ground level reference means to reference the boom relative to a remote point.



3,735,877

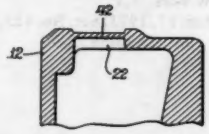
RAILWAY COUPLER HEAD

Raymond J. Bossong, Alliance, Ohio, assignor to AMSTED Industries Incorporated, Chicago, Ill.

Division of Ser. No. 4,937, Jan. 22, 1970, abandoned. This application Nov. 16, 1971, Ser. No. 199,288

Int. Cl. B61g *3/04, 3/08*

U.S. Cl. 213—75 R **5 Claims**



An improved railway coupler head having an integral horizontal metal wall section cast within the upper locklifter hole to completely close the upper hole thereby preventing foreign matter from entering into the coupler. The wall is relatively thin and is formed by the improved method of removing a portion of the coupler cope core, depending upon the desired location of the wall, prior to casting to thereby permit forming the easily removable horizontal wall section.

3,735,878

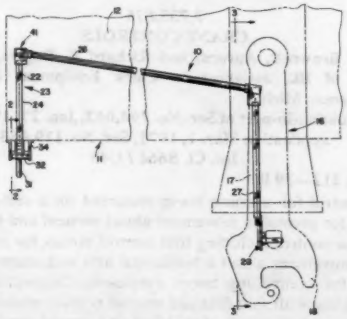
CHAIN AND STRUT COUPLER UNCOUPLING DEVICE

John W. Allen, Flossmoor, Ill., assignor to Stanray Corporation, Chicago, Ill.

Filed July 6, 1971, Ser. No. 159,668

Int. Cl. B61g *3/08*

U.S. Cl. 213—162 **6 Claims**



A coupler uncoupling arrangement including a chain operating member. The chain operating member is guided in rigid guide struts pivotally connected to each other. At least one of the guide struts is suspended from the coupler while another of the guide struts is pivotally connected to the underframe.

3,735,879

DOCK CRANE

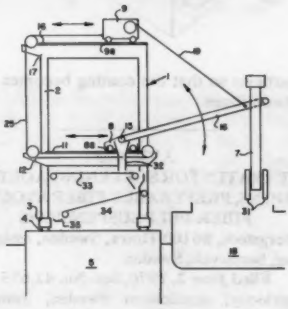
Daniel Grandin, Fontenay-aux-Roses, France, assignor to Fives Lille-Cail, Paris, France

Filed Feb. 4, 1972, Ser. No. 223,660

Claims priority, application France, Feb. 8, 1971, 7104063; June 11, 1971, 7121237

Int. Cl. B65g *63/00*

U.S. Cl. 214—14 **14 Claims**



The boom of a dock crane is pivoted to a trolley which is displaceably mounted on a mobile frame on the wharf. A support member, such as another trolley or a strut, supports the tackle for the boom intermediate the tackle and the frame. A cable connects the support member to the boom supporting trolley and guide pulleys for the cable are so mounted that the support member is displaced simultaneously in the same direction and at the same speed as the boom supporting trolley and to transmit to the frame the tilting force due to the weight of the boom and any load thereon.

3,735,880

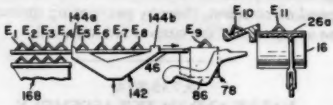
TRANSFER APPARATUS

William J. Hill, Holden; Harold E. Woodrow, and Kenneth L. Klusmier, both of Worcester, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed July 21, 1971, Ser. No. 164,601

Int. Cl. B65g *57/24*

U.S. Cl. 214—6 DK **7 Claims**



An apparatus for transferring elongated elements from a receiving station onto an adjacent carrier. The elements are first arranged in a layer or tier on a plurality of laterally extending support members spaced along the length of the receiving station at a level slightly above that of the carrier. The loaded support members are next extended over the carrier, after which stop members are raised to operative positions protruding between the support members at the receiving station. Thereafter, the support members are retracted, causing the elements to be stripped therefrom onto the carrier.

3,735,881

METHOD OF PROCESSING TOBACCO IN A BLEND-BULK SILO

Edwin L. Wilding, Louisville, Ky., assignor to Griffin & Company, Louisville, Ky.

Filed July 6, 1971, Ser. No. 159,823
Int. Cl. B65g 65/32
U.S. Cl. 214—152 20 Claims

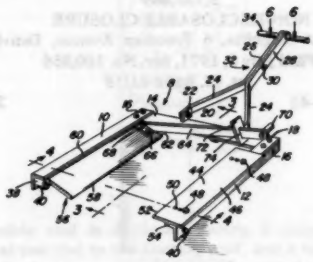
A method for processing tobacco which varies between a single type and a plurality of types, includes a plurality of bulk storing and blending steps. A shuttle car and conveyor carried thereon traverses a longitudinal storage bin or silo as the conveyor is controlled to deposit tobacco placed thereon into the silo beneath the conveyor. To store tobacco, the shuttle is moved incrementally while the conveyor is operated in the direction of that portion of the silo to be charged. To blend tobacco, the shuttle is reciprocated while the conveyor is operated in a direction toward that portion of the silo to be charged so as to deposit a plurality of layers into the silo. The shuttle and conveyor are operable to manually or automatically charge selected portions of the silo. The speed of the conveyor is varied in several of the blending steps to insure layers of even thicknesses. Tobacco is deposited on the conveyor by an additional shuttle and associated conveyor, the speed of the latter also being varied to insure deposited layers of even thickness on the first conveyor.

3,735,882

SUPPORTING AND POSITIONING DOLLY FOR DUAL WHEELS

Frank Reznicek, 1412 7th Street, Columbus, Nebr.

Filed July 14, 1971, Ser. No. 145,453
Int. Cl. B60b 29/00
U.S. Cl. 214—332 7 Claims



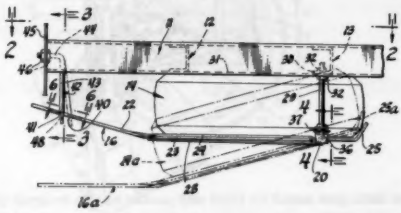
A dual wheel assembly handling dolly for use by a single workman, constructed to supportively cradle, transport and position the assembly whether removing or applying the same. It comprises a knockdown roller supported U-frame, a pivoted manually maneuverable detachable sectional handle and wheel contacting adapter plates. A first adapter plate is seated and adjustably bolted atop one leg of the frame. The second adapter plate is spaced from and parallel with the first plate, is hingedly mounted on the other leg, sloped inwardly and downwardly and is provided at a rearward transverse end with a right angled lever. This lever has a hand-grip and is provided with a slidingly mounted cleat which provides a lever propping chock and is adjustably engageable with the bight portion of the frame.

3,735,883

SPARE TIRE AND WHEEL CARRIER FOR PICK-UP TRUCKS

John Hrivnyak, 2055 Harvard, Berkley, Mich.

Filed Aug. 13, 1971, Ser. No. 171,465
Int. Cl. B62d 43/00
U.S. Cl. 214—454 5 Claims



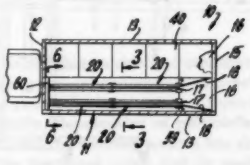
A spare tire and wheel carrier for a pick-up truck which includes a cross member pivotally mounted at its upper ends to the vehicle frame. A longitudinal center member having an inner end fixed to the cross member and an outer end releasably locked to the vehicle frame.

3,735,884

SYSTEM FOR LOADING TRUCKS AND WAREHOUSES

Robert H. Klett, 112 Gramaton Drive, Yonkers, N.Y.

Filed May 6, 1971, Ser. No. 140,737
Int. Cl. B60p 9/00
U.S. Cl. 214—515 15 Claims



The system comprises tracks laid on the floors of trucks, trailers or warehouses, having funneled entry guides, and pallets having wheels received on the tracks for easier and speedier loading. Means is provided to quickly attach different sections of the track. A front plate carrying the entry funnel receives a pallet thereon by a fork lift truck, and from which plate, the pallet may be pushed onto the tracks.

3,735,885

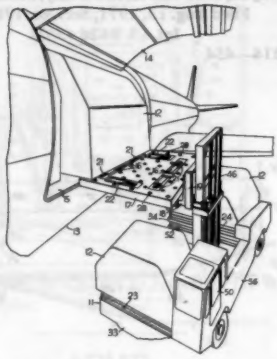
SIDELOADER LIFT TRUCK WITH POWERED DECK AND CARRIAGE ROLLERS

Samuel T. Comfort, Homewood, Ill., assignor to Allis Chalmers Corporation, Milwaukee, Wis.

Filed July 28, 1971, Ser. No. 166,910
Int. Cl. B60p 1/00
U.S. Cl. 214—520 10 Claims

Reversible powered rollers are provided on the fore and aft

decks of a sideloader lift truck to move cargo containers longitudinally and a carriage platform is provided with reversible



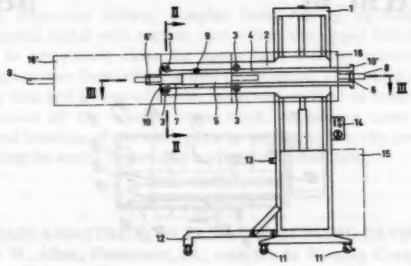
powered rollers to selectively move cargo containers longitudinally or laterally.

3,735,886

FEED DEVICE FOR CLOTH FOLDING MACHINES

Gunter Stumpf, Kreis Munsingen, 7421 Mehrstetten, Germany

Filed July 8, 1971, Ser. No. 160,819
Claims priority, application Germany, Aug. 21, 1970, G 70 31 432.8
Int. Cl. B66f 9/14
U.S. Cl. 214—730 8 Claims



A feed device for material folding machines comprises a holding plate secured to a vertically movable member of a displaceable lifting apparatus, the plate extending horizontally towards one side of the lifting apparatus. The holding plate serves as a carrier for a carriage which is horizontally displaceable on the plate, and attached to each of the two ends of the carriage is a forwardly overhanging arm for carrying a roll of material. The carriage is constituted of two telescoping parts for adjusting the spacing between the arms.

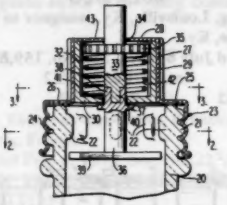
3,735,887

SAFETY CAP FOR MEDICINE CONTAINERS AND THE LIKE

Glenn H. Morris, 4203 Highwood Drive, Chattanooga, Tenn.

Filed Mar. 14, 1972, Ser. No. 234,507
Int. Cl. B65d 55/02
U.S. Cl. 215—9 15 Claims

A safety cap for protecting children from contact with the contents of medicine bottles or containers of poison features a screw-threaded cap on the neck of a bottle or container which cannot be completely removed until an associated plunger is



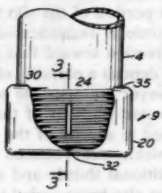
depressed to cause releasing of a locking means in the neck of the bottle or other container.

3,735,888

BABY BOTTLE

John M. Jacko, 1247 Hayden Avenue, East Cleveland, Ohio

Filed Dec. 23, 1970, Ser. No. 100,899
Int. Cl. A61j 9/00
U.S. Cl. 215—11 B 6 Claims



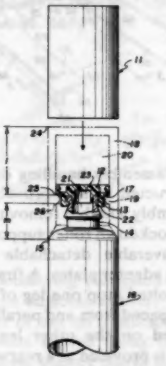
The specification and drawing disclose a baby bottle comprised of a cylindrical open ended tube which is threaded on each of its two ends. An air passageway which communicates between the interior and the exterior of the tube is formed through the threads at one end of the tube. The tube is fitted with two adjustably positionable caps on both of its ends. One cap is adapted to releasably secure a nipple and the cap and the other end is adapted to adjustably overlay the air passageway through the threads so that the air flow into the bottle can be adjusted.

3,735,889

NON-RECLOSABLE CLOSURE

Frank Vincent Stagnitto, 6 Freeman Avenue, Denville, N.J.

Filed July 8, 1971, Ser. No. 160,856
Int. Cl. B65d 41/18
U.S. Cl. 215—41 2 Claims



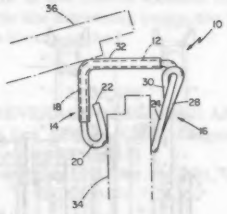
A two piece closure consisting of an inner snap-on cap and an outer shell adapted to prevent re-use of the closure after initial opening is disclosed.

3,735,890

LID SUPPORT

Robert S. Archibald, Gilson Road, Wellesley Hills, Mass.

Filed Apr. 12, 1971, Ser. No. 133,183
Int. Cl. G65d 43/24
U.S. Cl. 217—61 2 Claims



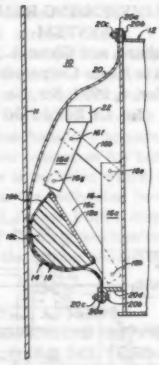
A lid supporting device for engagement with the upper portion of a container wall comprising a single piece of heavy gauge wire formed to have a wall-spanning back portion, a first leg, a second leg, and a sleeve of resilient non-abrasive material surrounding a major portion of the back portion. The first leg comprises a generally linear length of wire and a smoothly curved tail of wire at its lower end.

3,735,891

FLEXIBLE SEAL FOR A VAPOR CAVITY

Martin A. Nishkian, Long Beach, and Wayne E. Nuttall, San Gabriel, both of Calif., assignors to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 879,022, Nov. 24, 1969, Pat. No. 3,618,813. This application Apr. 19, 1971, Ser. No. 134,934
Int. Cl. B65d 87/18
U.S. Cl. 220—26 S 7 Claims



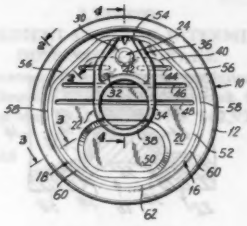
A flexible seal is disclosed having a support member secured at one end to the floating roof, and a tubular sealing member having a wear cover member provided with flanges at each end and a flexible core member. The sealing member has one flange secured to the free end of the support member and the other flange secured to the other end of the floating roof. The sealing member is operable to seal the vapor cavity.

3,735,892

FULL OPEN END HAVING CHORDAL START TEAR SCORE SECTIONS

Christian Frederick Kinkel, Arlington Heights, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Oct. 26, 1970, Ser. No. 84,072
Int. Cl. B65d 17/24
U.S. Cl. 220—54 3 Claims



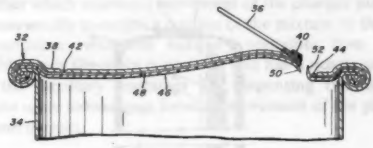
A score in a "full-open" end closure for a can, which defines a removable section in the end panel, has sections in the form of chords to the generally circular configuration of the score located equally distant from, and adjacent to, an opening tab secured to the removable section of the end panel. By providing these chordal score sections at the tear starting section of the score at either end of the pop or initial rupture section of the score, the load or force required to be exerted by the user to initiate the starting tear of the removable section from the end panel is substantially reduced and, thereby, openability of the "full-open" end closure is substantially improved and enhanced.

3,735,893

SHIELDED CONTAINER WALL OPENING

Herbert Gayner, Monroeville, and David A. Smith, Penn Hills, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 19, 1971, Ser. No. 190,479
Int. Cl. B65d 17/20
U.S. Cl. 220—54 2 Claims



A method of establishing a shielded container wall opening including providing a metal container wall panel having an adhesively bonded protective layer selected from the group consisting of polyolefin, copolymers of polyolefin-ethylene and ionomers of polyolefin. Providing a score line defined removable sector within the metal panel and an operating pull tab secured thereto. Thermally treating the container wall having the integral opening device at about 275° to 375°F for about 0.2 second to 4 minutes and preferably about 300° to 350°F for about 0.5 to 3 minutes. Operating the pull tab to initiate fracture of the score line and establish an opening in the container wall. Simultaneously elongating portions of the protective layer disposed in a generally underlying position with respect to the score line and severing the same to provide a shielding edge which is disposed protectively against the opening defining wall of the metal container wall panel. Feathering preferably including an average projection of about 0.002 to 0.010 inch beyond the metal opening defining wall.

3,735,894

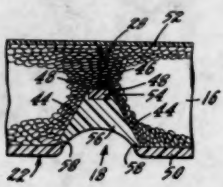
SELF-OPENING END CLOSURE HAVING A REPAIR COATED RUPTURABLE INTERIOR SCORE

Christian Frederick Kinkel, Prospect Heights, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Apr. 17, 1972, Ser. No. 244,667
Int. Cl. B65d 17/24
U.S. Cl. 220—54 8 Claims

A self-opening sheet metal end closure wherein a rupturable score is formed in the interior or product-facing surface of the

end closure resulting in a highly cold worked residual of sheet metal located between the score and the exterior surface of the end closure, the end closure having a non-metallic repair coat with a concave cross-sectional structure provided on the rupturable score substantially within and only partially filling the void defined by the score. The repair coat structure substantially prolongs the resistance of the highly cold worked sheet metal residual to chemical attack by corrosive products contained in the container closed by the end closure, while the amount of force required to rupture the score during opening of the end closure is substantially unaffected by the presence of the repair coat.



3,735,895

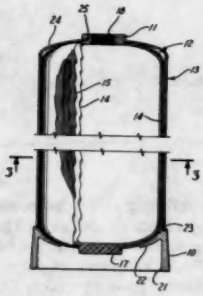
COMPOSITE NON-SWEAT WATER TANK

Jarold D. Roper, 17125 Bixby, Bellflower, Calif.

Filed May 24, 1971, Ser. No. 146,050

Int. Cl. B65d *25/14, 25/34*

U.S. Cl. 220—63 R **1 Claim**



A water tank in which an inner cylindrical vessel, of molded plastic wound with reinforcing strands has a base affixed to its lower end and is enclosed in an outer, cylindrical shell which seats in an upper edge of the base. The shell is reflective externally and air space is provided interiorly, so that the tank does not sweat.

3,735,896

JAW-OPERATED CUP DISPENSING MECHANISM AND METHOD

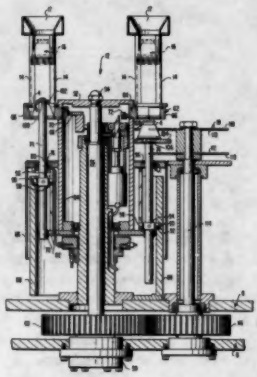
Robert J. Mistarz, Northbrook, and Albert B. Mojonnier, Sr., Chicago, both of Ill., assignors to Koehring Company, Milwaukee, Wis.

Filed June 17, 1971, Ser. No. 154,079

Int. Cl. B65g *25/00*

U.S. Cl. 221—210 **17 Claims**

A dispenser for cup-like articles rotates a plurality of stacks of the articles through a circular path. Each stack is normally supported by a jaw mechanism which engages the lowermost article of the stack. At one angular portion about the axis of rotation of the dispenser, the jaw mechanism associated with each stack is actuated to release the articles, and at this portion of the path a vertically reciprocable receiver moves into contact with the lowermost article in the stack. An extra increment of upward motion is imparted to the receiver for readjusting the stack. Then the receiver moves downwardly carrying the lowermost article of the stack with it. The jaw mechanism closes again to engage the next article in the stack,



while the receiver recedes to separate the lowermost article entirely from the stack. At another angular location, the separated article is transferred from the dispenser by a star wheel mechanism. The jaw mechanisms are cam operated, and means are provided for temporarily inactivating the cam mechanism when it is desired to continue rotation of the dispenser without delivering articles therefrom.

3,735,897

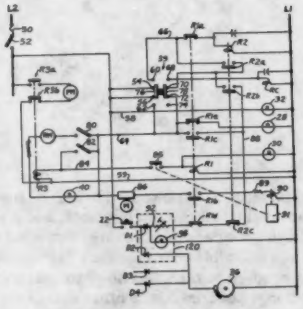
SELF SERVICE DISPENSING REMOTE CONTROL SYSTEM

Larry A. May, Jonesboro, and Glenn A. Jones, Mosheim, both of Tenn., assignors to Keene Corporation, New York, N.Y.

Filed Mar. 4, 1971, Ser. No. 120,815

Int. Cl. B67d *5/30*

U.S. Cl. 222—16 **11 Claims**



The specification discloses a remote control system, especially for self-service fuel, chemical, or other liquid dispensing pumps in which each dispensing pump is provided with a call switch which actuates a signal in a remote location whereupon the operator in a remote location can enable the respective dispensing pump to dispense fuel. The remote location is operable for monitoring the quantity of fuel dispensed and can include counter means for totalizing or limiting the quantity dispensed from each of a plurality of remote controlled dispensing pumps.

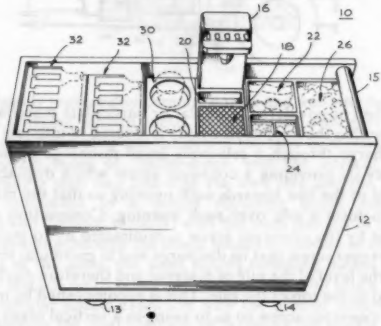
The signal which is actuated in the remote station consists of visual signal, such as a lamp, and an audible signal, such as a bell or buzzer, with the audible signal sounding only so long as the customer has the button of the call switch depressed at the respective dispensing pump, while the visual signal remains illuminated after the button on the dispensing pump is released. When the operator in the remote location takes the action necessary to enable the dispensing pump, the visual signal in the remote station is extinguished.

3,735,898

PORTABLE BEVERAGE DISPENSING APPARATUS

Robert L. Smith, Los Angeles, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Dec. 28, 1970, Ser. No. 101,780
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.4 **5 Claims**



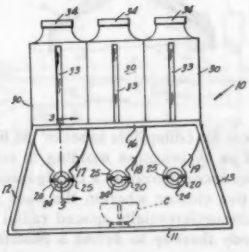
A portable, totally self-contained, liquor and soft drink beverage dispensing cart suitable for use in the narrow confines of commercial aircraft aisles. Various items to be dispensed are stored in separate collapsible compartments within a pressurized tank. The tank is filled with soda water before being pressurized. Tubes for the separate fluids lead through couplings in the wall of the tank to a dispensing head having a plurality of mechanically actuated valve mechanisms, each affording positive operation for both opening and closing. A cooling device is included which makes use of the ice cubes to be served in the individual beverages. The unit includes an individual liquor bottle dispensing and storage device which utilizes a spring mechanism to maintain a constant pressure urging the bottles toward their point of removal.

3,735,899

DISPENSING HOPPER

Kenneth Rollinson, P. O. Box 242, Tallulah, La.

Filed July 23, 1971, Ser. No. 165,560
Int. Cl. B67d *5/52*; **B65b** *37/00*
U.S. Cl. 222—135 **1 Claim**



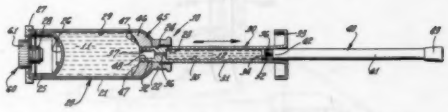
A dispensing hopper for powdered or granulated material having a rotary dispensing valve positioned in its lower end and arranged with a single pocket in one side of the valve which can rotate from a filling position to a dumping position to dump a predetermined measured quantity of material from the hopper. A plurality of hoppers are illustrated as a unit for dispensing varied products.

3,735,900

DUAL INGREDIENT STORAGE, INTERMIXING AND DISPENSING STORAGE

Kenneth W. Gores, Bellevue, Wash., assignor to Products Research & Chemical Corporation, Burbank, Calif.

Filed May 13, 1971, Ser. No. 142,926
Int. Cl. B67d *5/60*
U.S. Cl. 222—145 **1 Claim**



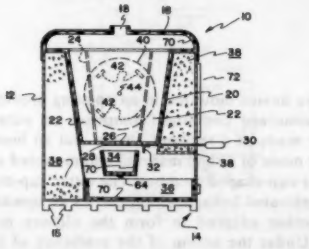
The cartridge, according to this invention, has a main container storing a first ingredient; an auxiliary container storing a second ingredient, and extending into the main container; a movable piston in the auxiliary container with a plunger secured thereto for exuding the second ingredient into the main container upon forward movement of the piston and plunger; a dasher threaded onto the inner end of the auxiliary container for intermixing the two ingredients upon manual movement of the auxiliary container relative to the main container after which rearward movement of the plunger pulls the piston rearwardly to return a portion of the mixture to the auxiliary container, with the auxiliary container then being removable from the main container; and has a nozzle securable to the auxiliary container for dispensing the mixture therefrom upon subsequent forward movement of the plunger and piston therein.

3,735,901

STORAGE CONTAINER FOR GRANULAR MATERIALS

Robert A. Taylor, 6511 Merrill Road, Columbia, S.C.

Continuation-in-part of Ser. No. 818,951, April 24, 1969, Abandoned.
Filed Mar. 29, 1971, Ser. No. 128,678
Int. Cl. B67d *3/00*
U.S. Cl. 222—196 **4 Claims**



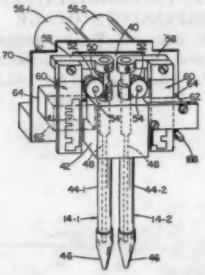
A portable storage device having a container housed within an outer substantially moisture-free container with a mechanism for insuring release of the cement or mortar in the inner container through coinciding perforations in the bottom and slide into a bucket dumped by a mechanism into a drawer which can be removed and emptied into the mixing box.

3,735,902

DISPENSER APPARATUS

Jerrold Zindler, Cambridge, Mass., assignor to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed July 22, 1971, Ser. No. 164,995
Int. Cl. A61b *10/00*
U.S. Cl. 222—363 9 Claims



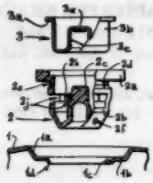
A dispenser apparatus comprises a housing that includes a chamber for holding a sample. A member in the housing is moved relative to the chamber from a first position to a second position to aspirate material into the chamber and is moved from the second position to the first position to dispense material from the chamber. Pressure in the chamber is increased at the end of the dispensing movement to discharge all of the material from the chamber.

3,735,903

VALVE DEVICES FOR PRESSURIZED CONTAINERS

Roger Remane, Sainte-Colombe-les-Vienne, France, assignor to Application Des Gaz, Paris, France

Filed Dec. 18, 1969, Ser. No. 886,242
Claims priority, application France, Dec. 18, 1968, 6850768
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.16 2 Claims



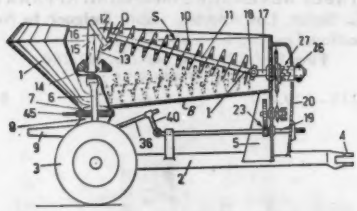
A valve device mounted in an opening provided in the wall of a pressurized container comprises an outer cup-shaped member made of a resilient plastic and an inner cup-shaped member made of a rigid material and mounted as a force fit in the outer cup-shaped member. The outer cup-shaped member has a perforated bottom which carries an upwardly extending axial portion adapted to form the closure member of the device. Under the action of the resiliency of the outer cup-shaped member this closure member is engaged in gas-tight contact into a tubular seat portion carried by the bottom of the inner cup-shaped member. This seat portion has a perforatable upper wall adapted to be perforated by the needle of a gas-intake head. The needle depresses the closure member and thus opens the valve device. If the gas-intake head is accidentally removed, the closure member returns to the closed position and prevents any gas exhaust from the container.

3,735,904

DEVICE FOR SPREADING, SOWING OR DELIVERING POWDERED OR GRANULAR MATERIAL

Herbert Vissers, Nieuw-Vennep, Netherlands, assignor to H. Vissers N. V., Nieuw-Vennep, Netherlands

Continuation-in-part of Ser. No. 807,365, March 14, 1969, abandoned. This application Apr. 13, 1971, Ser. No. 133,678
Claims priority, application Netherlands, March 21, 1968, 6804010; Jan. 29, 1969, 6901402
Int. Cl. G01f *11/00*
U.S. Cl. 222—412 21 Claims



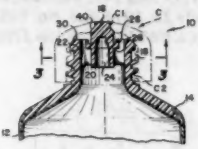
The bed of powdered, granular or particulate material contained within the hopper-like body is assured of ultimate gravity discharge through a relatively small discharge opening in the body by providing a conveyer screw which displaces the material of the bed towards such opening so that the material tends to form a pile over such opening. Compaction of the material by the conveyer screw is minimized by so mounting the conveyer screw that its discharge end in particular tends to follow the level of the pile of material and therefore discharges material to the top of the pile. This is accomplished by mounting the conveyer screw so as to swing in a vertical plane about a pivot point remote from the opening and thereby leaving the discharge end of the conveyor screw free to assume a position in which it remains essentially uncovered by the material.

3,735,905

PRECISION NECK CONSTRUCTION FOR CENTER LOCK CAPTIVE CLOSURE

Charles Arthur Badavas, Allendale, N.J.; Raymond William Landry, Hudson, Mass., and John William Piltzecker, Shelbyville, Tenn., assignors to American Can Company, New York, N.Y.

Division of Ser. No. 576,420, Aug. 31, 1966, abandoned. This application Jan. 25, 1971, Ser. No. 109,482
Int. Cl. B67d *3/00*
U.S. Cl. 222—521 3 Claims



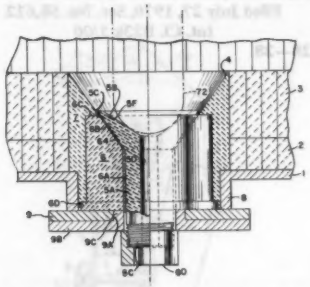
A neck element for collapsible tubes or the like wherein the neck is formed as by injection molding to maintain precise dimensional tolerances thereof in a configuration to receive a centerlock captive closure wherein the neck central plug is suspended by circumferentially spaced radial webs within a hollow neck body thereby to define a plurality of precisely formed dispensing apertures between the tubular member and the plug and terminating in orifices bounded by a sheared planar upper terminal surface.

3,735,906

REPLACEABLE MOLTEN METAL NOZZLE STRUCTURE

James E. Zettlemoyer, and Charles F. McGee, both of Bethlehem, Pa., assignors to Milford A. Juten, Washington, D.C., a part interest

Continuation-in-part of Ser. No. 802,138, Feb. 25, 1969, abandoned. This application Mar. 15, 1971, Ser. No. 124,186
Int. Cl. B22d 37/00
U.S. Cl. 222—567 15 Claims



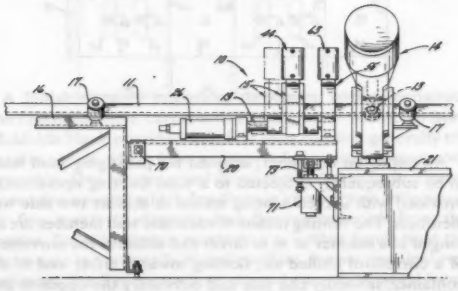
A readily replaceable ceramic nozzle and well ring for use in ladles carrying molten metal to cooperate with a vertically moveable valve stop rod to control the flow of molten metal, the nozzle being of funnel-shape with the conical mouth providing a well ring and with the well ring and the tubular stem supported in a nozzle receiving block means of preformed ceramic material with the stem portion of the funnel extending through the block means to outside of the metal casing of the ladle, the stem having retaining means such as screw threads on its outer end cooperating with screw threads on a tubular nozzle extension with the tubular nozzle extension serving the dual function of retaining the nozzle in position and also preventing splattering of the molten metal. The nozzle receiving block means has a nozzle receiving opening conically enlarged at its upper end so that a minimum of fire clay mud seal is required to seal the funnel shaped nozzle in the nozzle receiving block means, the space between the rim of the block means and the fire brick lining of the ladle being filled with mortar-like material such as HELSPOT so that a minimum of moisture is used in the plastic sealing materials when replacing the nozzle whereby the nozzle can be used immediately instead of requiring the long waiting period for setting up and hardening of the plastic materials.

3,735,907

MACHINE FOR INTERMITTENTLY FEEDING ELONGATED ARTICLES

William E. Kuchar, Cherry Valley, and Robert W. Mauk, Rockford, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Filed Jan. 20, 1972, Ser. No. 219,315
Int. Cl. B65h 17/44
U.S. Cl. 226—150 8 Claims



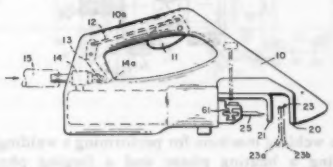
An elongated angle iron is fed lengthwise through successive intermittent strokes to a punch press by a movable carriage which supports a pair of upper and lower jaws operable to clamp the angle for movement with the carriage. The jaws are mounted to float vertically relative to one another so that each may grip the angle securely and then release the angle cleanly even if the angle is bowed intermediate its ends. During the feed stroke, the carriage is raised to lift the angle away from the die of the press and thereby avoid damage to the die.

3,735,908

MACHINE FOR INSERTING FASTENERS

John E. Kinney, Upton, and Arnold R. Bone, Needham, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed May 27, 1971, Ser. No. 147,528
Int. Cl. B65c 7/00
U.S. Cl. 227—67 34 Claims



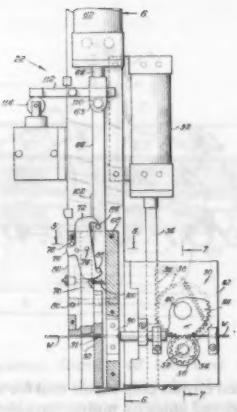
A machine for having a plurality of jaws for clamping layers of material therebetween and relatively moving the material and a needle in order to insert the needle through the material. Thereafter a fastener attachment member is forced through the needle to insert it through the material.

3,735,909

AUTOMATIC NAILING APPARATUS

Ernst G. Breckenfelder, Elmhurst, Ill., assignor to UPG Engineered Products Corporation, Elk Grove Village, Ill.

Filed July 30, 1971, Ser. No. 167,727
Int. Cl. B27f 7/02
U.S. Cl. 227—86 15 Claims

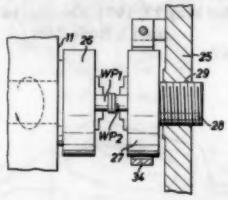


An improved automatic nailing apparatus having means for feeding a length of wire, bending the wire to form an L-shaped nail, severing the nail thus formed from the remaining length of wire, and driving the nail into an object to be nailed, such object being for example a bundle of roofing shingles to be bound together.

3,735,910
FRICTION WELDING

Geoffrey Walter Watson, and Brian Edward Jenkinson, both of Inverness, Scotland, assignors to A. I. Welders Limited, Inverness, Scotland

Filed Apr. 15, 1971, Ser. No. 134,290
Claims priority, application Great Britain, Apr. 14, 1970, 18543/70
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 14 Claims

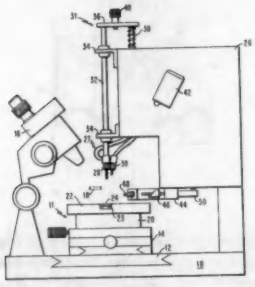


A friction welding machine for performing a welding operation including a heating phase and a forging phase, the machine being operative during the forging phase to convert kinetic energy produced by rotation of one of the workholding devices during the heating phase into axial thrust urging the workholding devices towards one another during the forging phase. The conversion of kinetic energy into an axial thrust may be made by two interengaged screw-threaded components, by a cam mechanism or by a mechanical lever system.

3,735,911
INTEGRATED CIRCUIT CHIP REPAIR TOOL

William C. Ward, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,063
Int. Cl. B23k *1/00*
U.S. Cl. 228—19 10 Claims

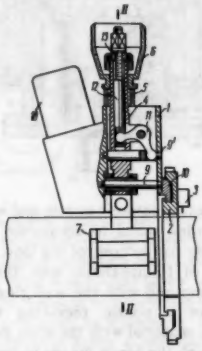


An integrated circuit chip repair tool for bonding or removing reflow soldered chips on multi-chip substrates having chip pickup means to move chips toward or away from a substrate, flame heating means to apply a concentrated source of heat to a single chip without overheating adjacent chips, infrared temperature sensing means to measure the temperature of a heated chip and control means responsive to the temperature of the heated chip to automatically discontinue heating by extinguishing the flame and to automatically activate the chip pickup means.

3,735,912
APPARATUS FOR WELDING NONROTATABLE PIPE JOINTS

Vasily Ilich Nikolaev, ulitsa Amudsena, 5, korpus 4-9; Alexandr Jurievich Eliseev, Lomonosovsky prospekt, 19, kv. 45; Vladimir Petrovich Bogachev, ulitsa Fonvizina, 14, kv. 40; Artem Petrovich Prosvirin, Inzhenernaya ulitsa, 8, kv. 51; Vladimir Ionovich Konstantinopolsky, ulitsa Kibalgicha, 4/6, kv. 38, and Anatoly Nikolaevich Belousov, proezd Cherskogo, 11, kv. 124, all of Moscow, U.S.S.R.

Filed July 27, 1970, Ser. No. 58,612
Int. Cl. B23k *5/00*
U.S. Cl. 228—28 6 Claims

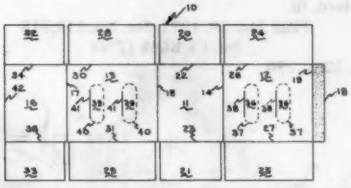


An apparatus for welding nonrotatable pipe joints, whose frame is by means of a fixing mechanism connected to one of the pipes to be welded together, while the torch moves along the joint by means of a rotating faceplate, said frame provided with a drive for its movement across the joint being movably mounted on said fixing mechanism, and carrying at least one circular guide for the rotational movement of the faceplate, whereon the torch is located.

3,735,913
VENTED POULTRY CONTAINER

Robert Q. Lueben, Detroit Lakes, Minn., assignor to Swift & Company, Chicago, Ill.

Filed Apr. 26, 1971, Ser. No. 137,539
Int. Cl. B65d *25/00*
U.S. Cl. 229—6 R 6 Claims



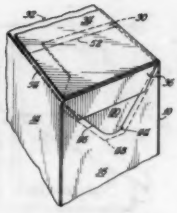
An improved container, adapted for packaging food items to be subsequently subjected to a blast freezing operation, is provided with spaced venting means in at least two side wall members. The venting means of each side wall member are arranged in a manner so as to direct and enhance the movement of a current of chilled air, flowing towards either end of the container, inwardly one side and outwardly the opposite side of the container is a single direction to provide increased air flow for rapid chilling of the packaged food item therein.

3,735,914

SIFT-PROOF DISPENSING CARTON

Peter C. Collura, Stamford, Conn., and John D. Desmond, Philadelphia, Pa., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,691
Int. Cl. B65d 5/72
U.S. Cl. 229—17 R 1 Claim



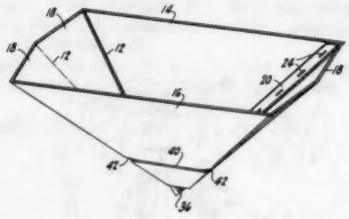
A seal-end, sift-proof, paperboard dispensing carton having a top closure arrangement including overlapping top closure flaps, extending from the upper edges of the side walls, and a removable portion in an upper area of one of the side walls which is separable from the side wall and connected to certain of the top closure flaps for removal therewith to open the carton.

3,735,915

DISPENSING HOPPER

Gunter G. Fuss, Daly City, Calif., assignor to Free-Flowing Packaging Corporation, Redwood City, Calif.

Filed July 22, 1971, Ser. No. 165,034
Int. Cl. B65d 5/72
U.S. Cl. 229—17 B 5 Claims



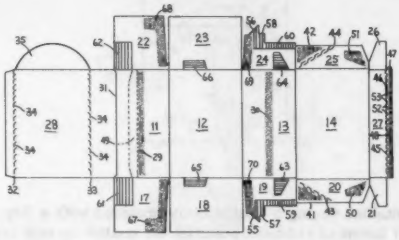
A foldable, easily assembled dispensing hopper construction fabricated from cardboard. The hopper is assembled from a foldable blank provided with fold lines defining generally triangular panels, which form an inverted pyramidal hopper configuration. One hopper panel is cut and folded to form a lower dispensing opening which functions in cooperation with movable flap means to dispense free flowing materials from the hopper. Suitable biasing means (c.g.a. rubber band) hold the flap means in a normally closed position. In one principal embodiment, the flap means is an integral part of the panel forming the dispensing opening. In another embodiment the flap means comprises a separate member.

3,735,916

ICE CREAM CARTON HAVING READILY REMOVABLE DIVIDER AND SUPPORT MEANS

Kenneth T. Buttery, Kalamazoo, Mich., assignor to Brown Company, Kalamazoo, Mich.

Filed May 3, 1971, Ser. No. 139,357
Int. Cl. B65d 5/48
U.S. Cl. 229—27 R 4 Claims



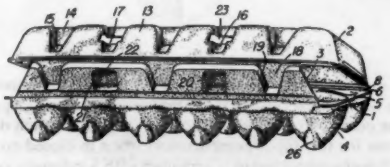
A paperboard carton including top, bottom, front, rear and end wall panels which together define an enclosure having at least two of the panels situated opposite each other and a divider panel detachably secured to the opposing panels, separating the enclosure into a plurality of compartments.

3,735,917

EGG CARTON CONSTRUCTION

Richard T. Warburton, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 137,915, April 27, 1971. This application June 18, 1971, Ser. No. 154,373
Int. Cl. B65d 85/32
U.S. Cl. 229—44 R 13 Claims



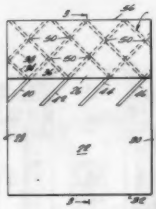
A disposable carton formed of low cost material and adapted for the packaging of eggs and the like is formed with coacting elements of a cover and latching flap which, in combination, afford rigidity to those elements, guide the coacting elements on closure and provide for a secure latching susceptible of easy opening. Recesses are provided in cover and latching flap for guidance and rigidity. Latching is accomplished by a recess extending inwardly from the cover front wall to engage the underside of a latching bar of the flap, which is positioned above a substantially rectangular shaped recess in the latching flap.

3,735,918

COHESIVE CLOSURE PATTERN

Werner Otto Tundermann, Colonia, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,632
Int. Cl. B65d *33/16*
U.S. Cl. 229—62 5 Claims



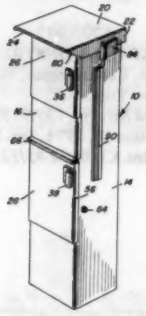
A container having a fillable body provided with a flap. A series of bands of cohesive material are coated on said body and said flap so that independent of the location at which said flap is folded, said cohesive bands will intersect and seal the container.

3,735,919

MAILBOX

Walter C. Morgan, P.O. Box 4088, Monroe, La.

Filed July 1, 1971, Ser. No. 158,939
Int. Cl. A47g *29/12*
U.S. Cl. 232—17 8 Claims



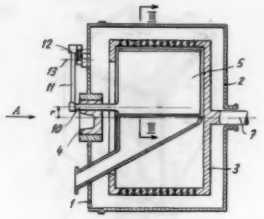
A mailbox in the form of an upright tubular member in the form of a hollow post or structural member having upper and lower compartments separated by a trap door which defines a bottom for the upper compartment when in closed condition. The lower compartment is provided with a manually operated lock device so that only authorized persons have access thereto with the lower compartment having sufficient capacity to receive a substantial number of mail items. The upper compartment is provided with a pivotally mounted access door, pivoted about a vertical axis, actuating a mechanism for automatically closing the trap door when the access door to the upper compartment is opened and permitting gravitational opening of the trap door when the access door to the upper compartment is closed. A signal flag is mounted on the mailbox for vertical reciprocatory movement between a retracted and extended position with the signal flag associated with the operating mechanism for the trap door to retain the trap door in closed position while the signal flag is in an extended signaling position to enable outgoing mail to be placed in the upper compartment for pickup by a mailman.

3,735,920

CENTRIFUGE AND DISCHARGE MEANS THEREFOR

Ernst Hausmann, Horgen, Switzerland, assignor to Escher Wyss Limited, Zurich, Switzerland

Filed Dec. 6, 1971, Ser. No. 205,021
Claims priority, application Switzerland, Dec. 16, 1970, 18550/70
Int. Cl. B04b *1/00*
U.S. Cl. 233—46 8 Claims



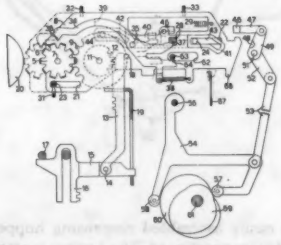
In a centrifuge comprising a housing, a drum and a clearing knife; the knife carrier having a pivot shaft pivotable mounted in a holding part; the improvement that said holding part is pivotably mounted in said housing; the axis of said shaft and the axis of said holding part are parallel to, and apart from each other; guide means connected to said housing and serving to guide said knife carrier — during turning of said holding part — so as to keep the cutting angle between said knife and the layer to be cleared out at least approximately constant.

3,735,921

PRINTING DEVICE FOR CALCULATING MACHINES

Bruno Azzalin, 10015 Ivrea, Turin, and Domenico Bertina, 10010 Parella, Turin, both of Italy, assignors to Ing. C. Olivetti & C., Ivrea (Turin), Italy

Filed Apr. 18, 1972, Ser. No. 245,073
Int. Cl. G06c *11/04*
U.S. Cl. 235—58 P 5 Claims



A printing device for a calculating machine comprises a set of toothed type wheels mutually distanced less that a set of reciprocable actuators connected thereto and apt to be rotated differentially. Also the pitch of the type wheels is less that the pitch of the reciprocable actuators.

Each type wheel is rotated by the relevant actuator through a rack pivoted on the actuator and motion reducing gear meshing with the type wheel.

3,735,922

COMBINATION AIR VENT-VACUUM BREAKER

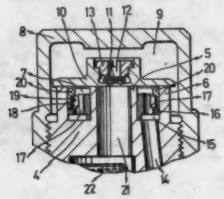
Katsuji Fujiwara, 191 Nishitani, Hiraoka-cho, Kakogawa-shi, Hyogo, Japan

Filed Feb. 7, 1972, Ser. No. 224,183

Claims priority, application Japan, Feb. 10, 1971, 46/5708; March 31, 1971, 46/19506

Int. Cl. F16t *1/44*

U.S. Cl. 236—66 8 Claims



A combination air vent-vacuum breaker such as is employed in a system using steam, is formed of a main body member and a cover member attached to and combining with the body member to form a pressure chamber. The main body member contains an inlet port and an outlet port which communicate with the pressure chamber and has a surface facing the pressure chamber which provides an inner annular valve seat and an outer annular valve seat. A disc valve, positioned within the pressure chamber, is movably displaceable relative to the valve seats to regulate flow between the inlet and outlet ports. Further, a bi-metal ring and a support member with a slanted surface are associated with the main body member and cooperate in opening and closing flow between the inlet and outlet ports as the bi-metal ring expands and contracts. Further, the construction of the air vent-vacuum breaker assures that any vacuum developed in the system during its operation can be broken immediately, any condensate in the system in the system at shut-down can be discharged and any dirt clogging operation of the valve disc can be blown clear.

3,735,923

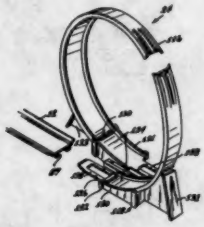
LOOPED TRAFFIC ACCESSORY

Emerson W. Brigham, Hermosa Beach; Harvey W. La Branche, Palos Verdes Peninsula; Alan W. B. Nash, Torrance; Howard F. Newman, Los Angeles; Thomas E. See, Huntington Beach; Marjorie Ann M. Smith, Gardena, and Arthur S. Woodward, Sylmar, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Division of Ser. No. 785,135, Dec. 19, 1968, abandoned. This application Aug. 13, 1970, Ser. No. 63,589

Int. Cl. A63h *19/36*

U.S. Cl. 238—10 E 2 Claims



A flexible track for toy vehicles has one end connected to a bracket on a C clamp, the clamp being engaged with an elevated support so the track droops to the floor below. Accessory means in the form of starting gates, loops, ski jumps, banked curves, finish gates, and track mergers may be connected to the track to interact with toy vehicles.

3,735,924

ELECTROSTATIC SPRAYING APPARATUS FOR PULVERULENT MATERIAL

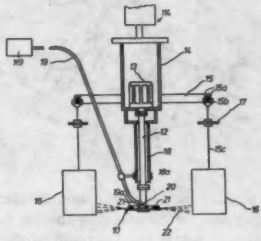
Hermann Wirth, 8883 Gundelfingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 6, 1971, Ser. No. 169,645

Claims priority, application Germany, Feb. 2, 1971, P 21 04 658.2

Int. Cl. B05b *5/00*; F23d *11/28*

U.S. Cl. 239—15 10 Claims



An electrostatic spraying apparatus for applying powder to housings of refrigerators or the like has a disk-shaped sprayer which is rotated about a vertical axis and the upper surface of which receives a stream of powder through the slot-shaped orifice of a rigid or flexible conduit at an angle of 5°–35°. The upper surface of the sprayer carries radial agitating blades for air to thus reduce the speed of powder which creeps radially outwardly and is dispersed at the circular spraying edge of the sprayer. The orifice discharges the stream in the general direction of the spraying edge and is closely adjacent to the blades and to the periphery of the drive shaft for the sprayer.

3,735,925

METHOD AND DEVICE FOR ELECTROSTATIC SPRAYING OF MATERIAL

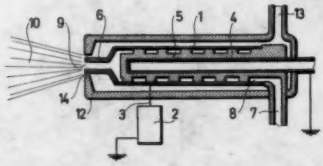
Gyorgy Benedek, Ringluo u. 35; Andras Buday, Korvin Otto u. 44, and Andras Bese, Torokvesz u. 7/c, all of Budapest, Hungary

Filed July 23, 1971, Ser. No. 165,606

Claims priority, application Hungary, July 31, 1970, HA-893

Int. Cl. B05b *5/02*

U.S. Cl. 239—15 6 Claims



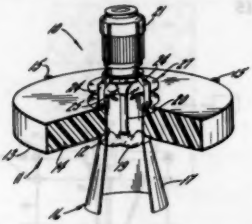
A method and apparatus for electrostatically charging material to be sprayed onto a surface, by pressing the material to be sprayed between two electrodes of a condenser positioned in a spaced-apart relationship and insulated from each other by a dielectric. One of the electrodes is connected to a high-voltage, low-amperage power supply and the other electrode is grounded to create a uniform electrical field through which the material to be sprayed is passed for achieving a strong, uniform electrostatic charging of all the material to be sprayed while requiring less voltage and current for operation than the prior art devices and methods.

3,735,926

LIQUID SPRAY DEVICE WITH FIXED AND ROTATABLE DIFFUSERS

Richard B. Ravitts, Rockford, Ill., assignor to Richards of Rockford, Inc., Rockford, Ill.

Filed May 27, 1971, Ser. No. 147,472
Int. Cl. B01f 5/12, 7/22
U.S. Cl. 239—16 8 Claims



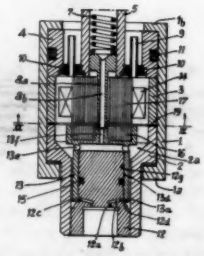
A floating aerator includes an axial flow impeller rotated by an electric motor and disposed within a tubular throat to pump a column of water from a pond upwardly through the throat and against a stationary or fixed diffuser positioned above the upper outlet of the throat. The fixed diffuser divides the column of water into a central core which passes through a neck portion of the diffuser and an outer sleeve which is deflected outwardly of the throat by an annular baffle encircling the upper end of the neck. The baffle extends outwardly from the neck in a generally horizontal direction to guide the deflected water in a relatively flat trajectory to cause the water to strike the surface of the pond with considerable force. A rotatable diffuser positioned above the fixed diffuser coacts therewith to sling the central core of water outwardly relative to the throat in a path above and converging downwardly into the water deflected by the baffle.

3,735,927

ELECTRO MAGNETIC INJECTOR

Louis A. Monpetit, L'Etang La Ville; Herve Gueret, Versailles; J. V. Schneider, Mante La Ville, and J. W. Ufnalewski, Marly Le Roi, all of France, assignors to Societe Des Procedes Modernes D'Injection Sopromi, Les Mureaux, France

Filed Apr. 21, 1971, Ser. No. 135,962
Claims priority, application France, Apr. 22, 1970, 7014582
Int. Cl. B05b 1/30
U.S. Cl. 239—585 5 Claims



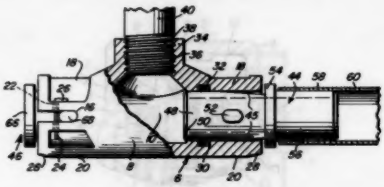
An electromagnetic fuel injector for internal combustion engines wherein the fuel is fed onto the periphery of an annular piston controlled by the armature of the injector electromagnet, so as to enter when the piston is raised an annular chamber communicating with the injection ports in the injector nozzle; said chamber is bounded by the nozzle and the free end of the piston one of the ridges of which cooperates with a seat formed by a frustoconical area on the nozzle, so as to close said chamber when the piston is urged onto its seat by a spring or by a hydraulic reaction.

3,735,928

SPRINKLER MOUNTING AND PIPE CONNECTOR

Thomas E. Watts, P.O. Box 534, and Clifford L. Ballard, P.O. Box 48, both of Shelley, Idaho

Filed Dec. 2, 1971, Ser. No. 203,965
Int. Cl. A01g 25/00; F16l 41/00
U.S. Cl. 239—267 4 Claims



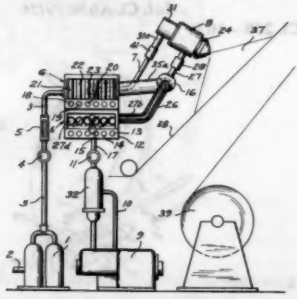
A T-coupling for anchoring and supporting a vertical upstanding spray pipe having its upper end provided with an appropriate sprinkler head. The T-coupling comprises an elongated hollow body having a pair of horizontally aligned branches and a complemental upstanding vertical branch. The vertical branch supports the spray pipe. The respective horizontal branches are basically alike in that the outer end of each branch has diametrically opposite notches. These notches open outwardly and provide keyways. They also define upper and lower half portions which in turn are provided with paired keeper holes for L-shaped keeper pins. The notched horizontal branches serve to accommodate attachable and detachable fittings. One fitting comprises a sleeve and has diametrically opposite positioning and retaining lugs which are removably lodged in the keyways and held in place by the keeper pins. One fitting serves as a connector for the coacting end portion of a pipeline which delivers and feeds water to the coupling. The other fitting is provided with a flanged closing head and constitutes a closing plug for that end of the coupling with which it is cooperable.

3,735,929

DEVICE FOR APPLYING A SELECTED MOISTURE CONTENT TO A WEB MADE OF A FIBROUS MATERIAL

Hanns Dieter Pleines, Benzstrasse 47-49, Sprendlingen-Hessen, Germany

Filed Sept. 24, 1970, Ser. No. 75,143
Int. Cl. B05b 7/32
U.S. Cl. 239—341 6 Claims



A dampening device applies a selected moisture content to a fibrous web such as a paper or textile web by spraying liquid in nebulized form upon the web. Solid, liquid or gaseous additives may be included in the stream of nebulized liquid at selected proportions. The liquid and the additives, if any, are

nebulized by feeding flows of liquid plus additives, if used, and air to spray nozzles which nebulize the liquid by the action of the air flows and direct cones of nebulized liquid upon the web in uniform distribution and at a minimum impact pressure thereby effectively avoiding spotting, discoloration and excessive moistening of the web material.

3,735,930

FUEL INJECTION NOZZLE

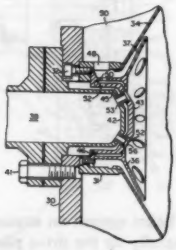
Yoshitaka Mori, Tarumi-ku, Kobe, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 29, 1971, Ser. No. 184,676

Claims priority, application Japan, Nov. 30, 1970, 45/118098

Int. Cl. F23d *13/40*

U.S. Cl. 239—419.5 **5 Claims**



A fuel nozzle structure for a combustion chamber, the downstream portion of the nozzle structure having a plurality of hollow nozzle inserts disposed therethrough, and a nozzle cover in spaced relation with the downstream nozzle portion and defining a cooling air passageway therebetween. The nozzle inserts project into apertures in the nozzle cover so that fuel can be projected through the cover and into the combustion chamber and the inserts being in spaced relation with the cover so as to allow cooling air flowing through the passageway to flow into the combustion chamber. This fuel nozzle structure prevents residues from collecting on the downstream nozzle portion.

3,735,931

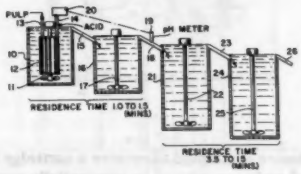
FLOTATION OF COPPER ORES

David Weston, Toronto, Ontario, Canada

Continuation of Ser. No. 37,679, May 15, 1970, abandoned, which is a continuation-in-part of Ser. No. 874,026, Nov. 3, 1969. This application July 19, 1972, Ser. No. 270,961

Int. Cl. B03b *1/04*; B03d *1/02*

U.S. Cl. 241—24 **36 Claims**



A process for the flotation of copper minerals employing sulfhydryl anionic collectors wherein the copper minerals are conditioned in at least one stage at a pH below 5.5 for a predetermined period followed by at least one further stage of conditioning for a predetermined period at a pH beginning above 9.0 in the presence of the collector, and the resulting pulp is subsequently subjected to froth flotation.

3,735,932

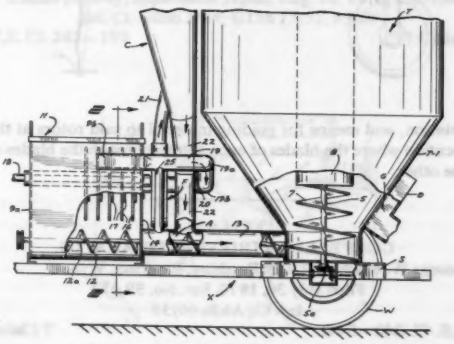
SYSTEM FOR OVERCOMING TRANSPORT-PARTICLE-FLOW DEFICIENCIES INHERENT IN FEED GRINDING AND MIXING MACHINES USING DUST COLLECTORS FOR THE GRINDER

Richard S. Bradley, Fairmont, Minn., assignor to Art's-Way Manufacturing Company Incorporated, Armstrong, Iowa

Filed Dec. 8, 1971, Ser. No. 205,877

Int. Cl. B02c *13/288*

U.S. Cl. 241—60 **4 Claims**



A new system for overcoming particle-flow deficiencies is readily applicable to most conventional feed grinding and mixing machines now in use by addition and connection of a minimal number of components. Said grinder mixers employ, in addition to the feed mixing mechanism and tank, a grinder, such as a hammermill, having its bottom discharge transport-connected to the lower portion of the feed mixing tank, usually by means of an enclosed screw conveyor. Said combination machines also employ an upstanding dust collector interspersed between the grinder and the screw conveyor and equipped with a power fan to remove the finer comminuted particles and dust from the interior of the grinder and to collect and communicate the same to an intermediate portion of the screw conveyor and into the stream of the larger ground particles. The screw conveyor builds up pressure throughout its length with the result that upward air pressure is applied at the communication point with the depending discharge of the dust collector, producing upward blowout and often clogging. Also, in present machines back pressure is created at the extreme discharge of the screw conveyor into the tank. The new system applies a predetermined degree of suction to the pressure build up area near or at the discharge tube of the dust collector, thereby relieving the accumulated pressure in said conveyor at the point of connection with the dust collector and also at the ultimate discharge of the conveyor into the bottom portion of the mixing tank.

3,735,933

DISPOSAL MACHINE FOR CUTTINGS OR THE LIKE

James Samuel Campbell, 74 Sleepy Hollow Lane, Orinda, Calif.

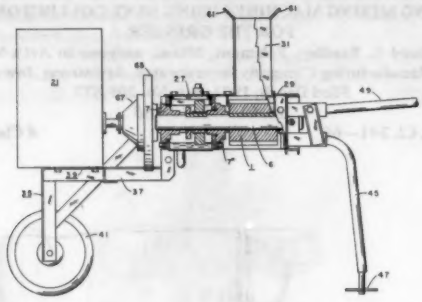
Filed Apr. 1, 1971, Ser. No. 130,093

Int. Cl. B02c *13/06*

U.S. Cl. 241—236 **4 Claims**

Apparatus for the disposal of cuttings or the like adapted to cut, tear and compress such cuttings to prepare the same for composting, involving a pair of adjacent parallel disposed contra rotating rotors, each of the rotors having circumferentially

spaced blades at a rake angle in the direction of rotation, with the blades of one overlapping those of the other rotor during



rotation, and means for guiding material to said rotors at the location where the blades of each rotor approach the blades of the other.

3,735,934

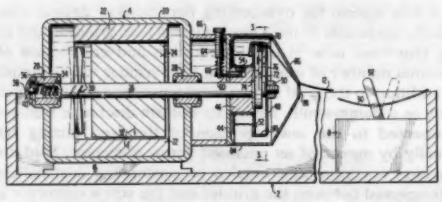
GOLF BALL RETRIEVING APPARATUS

George W. Black, 902 East Pershing, Riverton, Wyo.

Filed July 30, 1970, Ser. No. 59,412

Int. Cl. A63b *69/36*

U.S. Cl. 242—54 R **7 Claims**



Apparatus for retrieving a golf ball, wherein a line is attached to the ball and a reel automatically rewinds the line to return the ball after the ball has been driven. The motor is connected with the reel through a clutch that allows the line to be unwound from the reel with a selected tension and to be rewound by the motor.

ERRATUM

For Class 242—71 see:
Patent No. 3,736,015

3,735,935

REEL HUB ASSEMBLY

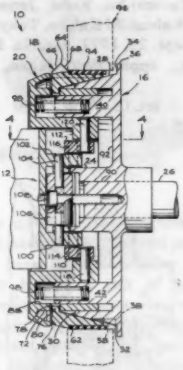
Robert A. Nordmeyer, Los Angeles, Calif., assignor to Pertec, Chatsworth, Calif.

Filed Dec. 27, 1971, Ser. No. 212,318

Int. Cl. B65h *19/02, 75/34*

U.S. Cl. 242—68.3 **9 Claims**

A hub assembly actuatable to selectively lock and unlock a reel thereon. The hub assembly is particularly useful with magnetic tape reels for enabling a reel to be locked onto the hub for rotation therewith. With the hub assembly unlocked, the reel can be easily placed on or removed from the hub assembly. The hub assembly includes a cylindrical drive plate secured to a drive shaft. The circumferential surface of the drive plate is formed by an inclined plane terminating in a flange defining a radially extending reference surface. A pressure plate is mounted substantially parallel to the drive plate for limited axial movement with respect thereto in response to the movement of an actuator handle coupled to the pressure plate. As the actuator handle is moved from an unlocked to a locked position, the pressure plate moves toward the drive plate exhibiting a travel stroke on the order of 0.120 inches.



The pressure plate bears against an expansion ring which expands as it moves axially up the drive plate inclined plane to press outwardly against the inner surface of a tape reel. The expansion ring is provided with several protrusions beveled to define inclined planes for forcing the tape reel axially against the flange reference surface as the ring expands. The linkage coupling the actuator handle to the pressure plate is designed to assure stable retention of the actuator handle in either the locked or unlocked position.

3,735,936

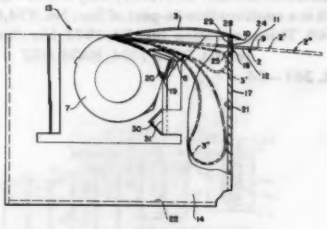
WEB SEPARATING DEVICE

Anthony C. D. Ercole, and David N. Schwardt, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 29, 1971, Ser. No. 167,195

Int. Cl. G03b *23/04*

U.S. Cl. 242—71.1 **7 Claims**



An enclosure is adapted to receive a cartridge in which first and second webs are wound in substantially contiguous relation on a common core, the cartridge being provided with an opening through which such webs can be advanced. The enclosure includes a wall member in which a web egress slot is disposed and a projecting member which is engageable with a corresponding member of the cartridge. When so engaged, the cartridge will be oriented within the enclosure in a manner such that if the first and second webs are advanced from the cartridge opening, the first web will be positioned for movement through the web egress slot, and the second web will be

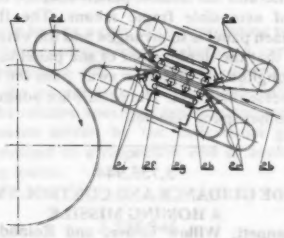
positioned to abut against the wall member of the enclosure and thus separate from the first web upon movement of the first web through the web egress slot. The periphery of the web egress slot is shaped to support the opposed edges of the first web while maintaining a spaced relation with at least one of the web faces. To facilitate insertion of a free leading end of the first web into the web egress slot, the wall member includes an open-ended guideway which communicates with the slot so that such web end can be readily directed into the slot.

3,735,937

CONTINUOUS SHEET SLITTING MILLS

Bernard Plantard, 14, rue du Clos-des Moines 95, Argenteuil, France

Filed Feb. 8, 1971, Ser. No. 113,304
Int. Cl. B65h *23/10, 23/30*
U.S. Cl. 242—75.2 **21 Claims**



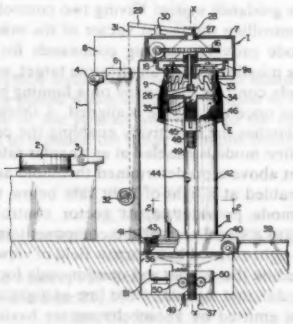
In a mill for slitting wide sheets a tensioning device is provided for simultaneously braking, without any friction effect, a plurality of strips to be subsequently reeled on a same coiling drum, wherein the necessary braking effort is transmitted to endless belts, the braking means are adapted to impart different speeds to said endless belts which are equal to the speeds of the cut strips to be braked, respectively.

3,735,938

APPARATUS AND METHOD FOR WINDING WIRE ON COILS

Frans Coopman, B 8730 Harelbeke, Belgium, assignor to N.V. Bekaert S.A., Zwevegam, Belgium

Filed July 12, 1971, Ser. No. 161,822
Claims priority, application France, July 20, 1970, 7026615
Int. Cl. B21c *47/02*
U.S. Cl. 242—83 **10 Claims**



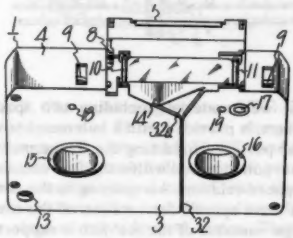
An apparatus and method for winding wire on coils is disclosed in which the apparatus includes a wire winding device and a coil reception device. Means are provided for maintaining an axial force on the end of the coil disposed on the wire winding device and a support means for maintaining an axial force on the other end of the coil disposed on the coil reception device. Operating means are provided for moving the support means to release the axial force on the other end of the coil thereby causing movement of the coil on the coil reception device and actuating means are provided to activate the operating means in response to an increase in the axial forces on the coil.

3,735,939

TAPE CASSETTE

Katsu Inaga, Satagaya-ku, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 9, 1971, Ser. No. 170,214
Claims priority, application Japan, Aug. 10, 1970, 45/79548
Int. Cl. G03b *1/04;* **G11b** *15/32, 23/04*
U.S. Cl. 242—198 **7 Claims**



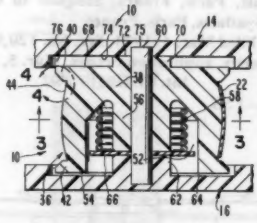
A tape cassette for magnetic tape apparatus for recording or reproducing or both and which has a housing formed by walls and in which one of the walls has formed therein a cutout and a slot contiguous thereto for engagement with one part of the apparatus to guide the tape cassette to a proper position of the apparatus.

3,735,940

IDLER ASSEMBLY FOR TAPE CASSETTE

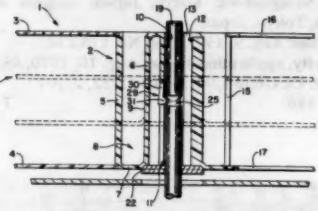
Vern R. Schwartz, Cupertino, Calif., assignor to Information Terminals Corp., Mountain View, Calif.

Filed Feb. 5, 1971, Ser. No. 112,984
Int. Cl. G11b *23/10;* **B65h** *27/00*
U.S. Cl. 242—199 **8 Claims**



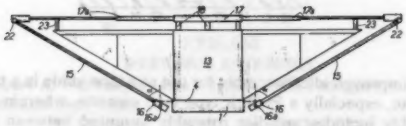
An improved idler assembly for use as a tape guide in a tape cassette, especially a Phillips type tape cassette, wherein the assembly includes an idler rotatably mounted between the spaced, opposed walls of the cassette and having an outer, tape-engaging surface which is convex to present a crown to keep the tape centered on the idler as the tape moves partially about the idler and as the idler rotates in the cassette. The idler has a bore extending into one end face thereof and a coil spring in the bore biases the idler toward one wall of the cassette. The idler has a pair of end flanges with each flange having a barrier surface preventing any substantial axial movement of the tape relative to the crown.

3,735,941
REEL FOR WEB MATERIAL
Gordon P. Brown, 36 Solman Dr., Rochester, and Andrew V. McClare, 47 Wincanton, Fairport, both of N.Y.
Filed July 26, 1971, Ser. No. 166,050
Int. Cl. B65h 19/02
U.S. Cl. 242—68.3 3 Claims



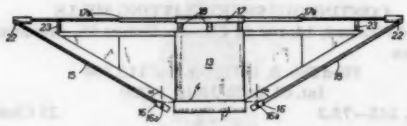
A reel for web material, including two spaced opposed flange members, is provided with a hub member which has an outer tubular portion supporting the flange members and an inner core portion disposed within the first-mentioned portion in radially spaced relation. An opening in the core is adapted to receive a drive spindle for rotation of the reel. A flexibly movable finger member of the reel hub is supported, in a cantilevered manner, within a core slot which communicates with the core opening. This finger member has a cam detent which is adapted to impart flexing movement to the finger member and to engage an engageable portion of the drive spindle for securing the reel on such spindle. Since the cam detent is disposed at a location which is substantially midway between the reel flanges, reels of the foregoing kind having different flange member spacing for supporting various width webs can be respectively located on the drive spindle in a manner whereby the longitudinal center line or each supported web will be disposed in the same position with respect to such spindle.

3,735,942
SPACE STATION WITH SOLAR GENERATORS
Wolfgang Palz, Paris, France, assignor to Centre National D'Etudes Spatiales, Paris, France
Filed Mar. 4, 1971, Ser. No. 120,976
Claims priority, application France, Mar. 5, 1970, 7007954
Int. Cl. H01l 15/02
U.S. Cl. 244—1 SS 6 Claims



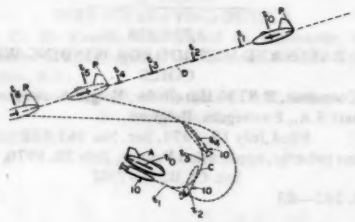
A solar generator has flexible panels adapted to be deployed by means of extensible frame means. The flexible active material of each panel is so arranged and the extensible frames so operated that the development of the panel takes place not only in the longitudinal direction away from the base, but also in the transverse direction. The panels are adapted for use on satellites or other space vehicles.

3,735,943
SPACE STATION WITH SOLAR GENERATORS
Philippe Fayet, Avon, France, assignor to Centre Nationale D'Etudes Spatiales, Paris, France
Filed Mar. 5, 1971, Ser. No. 121,500
Claims priority, application France, June 19, 1970, 7022716
Int. Cl. H01l 15/02
U.S. Cl. 244—1 SS 4 Claims



A solar generator has flexible panels adapted to be deployed by means of extensible frame means. The flexible active material of each panel is so arranged and the extensible frames so operated that the deployment of the panel takes place not only in the longitudinal direction away from the base, but also in the transverse direction. The panels are adapted for use on satellites or other space vehicles.

3,735,944
DUAL MODE GUIDANCE AND CONTROL SYSTEM FOR A HOMING MISSILE
Roger J. Bannett, Willow Grove, and Roland S. Hal, Jr., Ivyland, both of Pa., assignors to the United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 25, 1971, Ser. No. 156,672
Int. Cl. F41g 7/00, 7/10
U.S. Cl. 244—3.15 8 Claims

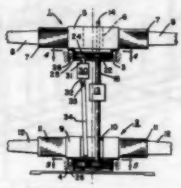


A missile guidance system having two control modes alternatively controlling the thrust vector of the missile. The first control mode provides turning commands for substantially aligning the missile towards an airborne target, and the second control mode controls the missile on a homing path in pursuit of the target once the missile is aligned. A threshold detector operates switches for selectively enabling the control modes, where the first mode is enabled at an angular rate of the target line-of-sight above a predetermined threshold and the second mode is enabled at a light-of-sight rate below the threshold. The first mode provides thrust vector control signals corresponding to a signal sum of the component angle signals of the line-of-sight emitted by a narrow field of view infrared sensor mounted on the missile and continuously locked on to the target, angular rate signals of the line-of-sight, and acceleration signals emitted by an accelerometer having orthogonal sensing axes normal to the line-of-sight. The second mode provides thrust vector control signals corresponding to the difference between the signal sum of the first mode and accelerometer signals emitted by an accelerometer mounted on the missile having orthogonal sensing axes normal to the missile.

3,735,945
YAW CONTROL SYSTEM FOR AN AIR VEHICLE

Marius E. Huvers, Ste Therese, Quebec, Canada, assignor to Canadian Limited, St. Laurent, District of Montreal, Quebec, Canada

Filed Mar. 29, 1971, Ser. No. 128,712
Claims priority, application Canada, Apr. 24, 1970, 081046
Int. Cl. B64c 27/12
U.S. Cl. 244—17.19 15 Claims

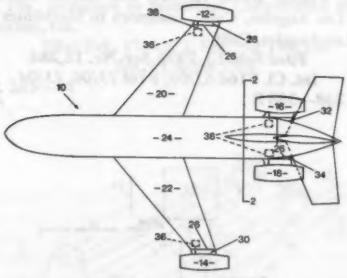


An air vehicle having a pair of contrarotating rotors is provided with a yaw control system including a variable clutch operatively associated with a differential gearbox in such a manner that the energization of the clutch will produce a variation in the relative speeds of rotation and torques of two rotating elements driven by the differential gearbox and drivingly connected to a respective one of each of the two contrarotating rotors.

3,735,946
AIRCRAFT ENGINE MOUNTINGS

John Albert Mullins, Chellaston, Derby, England, assignor to Rolls Royce Limited, Derby, England

Filed July 7, 1971, Ser. No. 160,318
Claims priority, application Great Britain, July 9, 1970, 33,316/70
Int. Cl. B64d 27/18, 27/20
U.S. Cl. 244—54 3 Claims



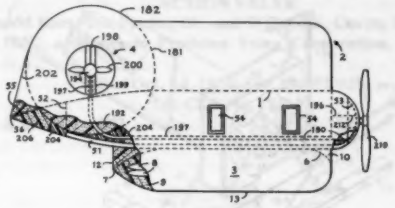
A multi engined aircraft is provided with standardized engine mounting points which enables an engine to be removed from one side of the aircraft and fitted to the opposite side thereof, so as to broaden the range of engine interchangeability.

3,735,947
CUSHIONED, BARREL-CURVED, WRECK-RESISTANT VEHICLE

Alvin Edward Moore, 916 Beach Boulevard, Waveland, Miss.

Filed Dec. 29, 1970, Ser. No. 102,321
Int. Cl. B64c 1/06
U.S. Cl. 244—119 28 Claims

A strong, light-weight, shock-absorbing vehicle having: a barrel-curved cabin, with surfaces curved inward toward the cabin's axis and hollow elements in the sidewalls; cushioning means, mostly below the cabin, comprising a long pad (FIG. 1) or a tandem pair of spaced pads (FIGS. 2 and 3) (optionally floating, landing or wheel-supporting means — preferably hydrofoils); stiffly resilient means, comprising inflated tubes and resilient plastic, connecting the pad or pads with the cabin; balloon means connected to the top of the cabin, stabilizing it against rolling and pitching; and a powered, reversible steering propeller for holding the high craft on course against strong winds. The preferred balloon is much larger than the cabin, and the preferred shock-absorbing means is

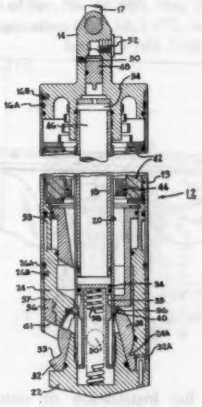


shown in FIG. 3. The cushioning means of FIG. 2 or 3 comprises flattened corners at 29 of the main, elongated, plastic-sheathed, pad-supporting tubes (14, 16, 18), and as in FIG. 3 preferably comprises diagonal, inflated, bracing members (49, 50). The cabin comprises barrel-curved, stave-like members, bonded together at their sides, and clamped together with barrel-hoop-like rings or other looped means. These members may be arranged in the circular-in-cross section cabin form of FIGS. 2 and 3 or the oblong-in-cross-section form of FIG. 13.

3,735,948
ROCKET CATAPULT

Hugh D. MacDonald, Cinnaminson; Norman J. Waecker, Masonville, and Charles S. Sterrett, Meadowville, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed June 1, 1971, Ser. No. 148,562
Int. Cl. B64d 7/00, 11/06
U.S. Cl. 244—122 A 12 Claims

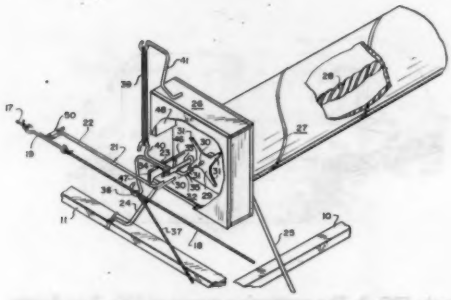


A rocket catapult ejection arrangement for a seat-occupant mass of a disabled aircraft in which the longitudinal axis through the nozzle throat of the rocket motor is always operatively directed toward the center of gravity of the seat-occupant mass regardless of individual seat elevational adjustments affected for any of various flight condition improvements.

3,735,949
KITE

James V. Theis, Jr., 3324-B Western Avenue, Park Forest, Ill.

Filed Mar. 12, 1971, Ser. No. 123,671
Int. Cl. B64c 31/06
U.S. Cl. 244—155 A 8 Claims

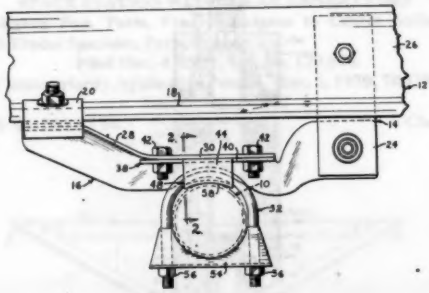


A kite that is maneuverable from the ground and that has as part of its bridle device a laterally extending cord mounted on the kite frame for lateral movement and a movable member also mounted on the frame and attached to the bridle device for moving it in increments upon manipulating a kite controlling cord. This lateral movement of the bridle device changes the relative point of attachment of the cord to the kite, as desired, so that the flying characteristics of the kite are similarly altered.

3,735,950
HANGER ASSEMBLY FOR AUTOMOBILE EXHAUST SYSTEMS

John D. Paintin, 8125 Dearborn, Prairie Village, Kans.

Filed June 28, 1971, Ser. No. 157,337
Int. Cl. F16l 3/02
U.S. Cl. 248—62 3 Claims

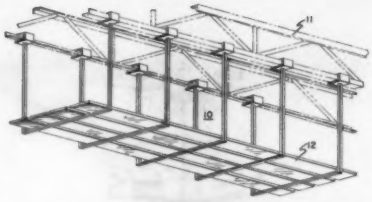


An attachment for installation of automobile exhaust system replacement components comprising a baseplate configured to be bolted to the frame mounted hangar bracket. The base plate has a hook depending from one edge with an arcuate upper surface adapted to receive the bight of a U-clamp with the legs thereof extending downwardly from the hook. The replacement components are installed between the clamp legs from below and the clamp is closed below the components to secure the latter to the vehicle frame.

3,735,951
SUSPENDED MOVABLE SCAFFOLD

Philip E. Reed, 4818 Grover Street, Boise, Idaho

Filed July 28, 1971, Ser. No. 166,895
Int. Cl. E04g 3/14
U.S. Cl. 248—340 1 Claim

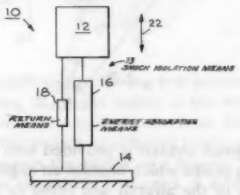


The present invention comprises a substantially U-shaped truss member including a flat base and a pair of opposing perpendicularly carried upstanding legs operable to support and carry deck planking forming a work platform of the scaffold; and a substantially C-shaped rafter engaging bracket suitably fastened to the terminal ends of the upstanding legs of the truss portion operable to slidably engage ceiling rafters commonly employed in building construction, each bracket being provided with a bracket closure bolt pivotally mounted to the lower portion of each of the C-shaped brackets and engageable with the top plate thereof.

3,735,952
ENERGY ABSORBING SHOCK ISOLATION STABILIZING ARRANGEMENT

David L. Platus; David A. Lee, and Gernot Harold Klein, all of Los Angeles, Calif., assignors to Mechanics Research Inc., Los Angeles, Calif.

Filed Feb. 13, 1970, Ser. No. 11,284
Int. Cl. F16d 63/00; F16f 13/00, 15/04
U.S. Cl. 248—358 R 33 Claims

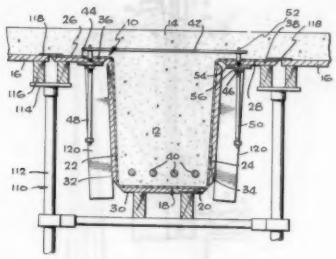


An energy absorbing shock isolation stabilizing arrangement for providing shock and vibration isolation of an object within a supporting enclosure. The arrangement provided is passive and has energy absorption means for absorbing energy during relative motion of the object within the enclosure from a base position to displaced positions at a comparatively high energy absorption rate that preferably is constant and substantially independent of the magnitude of the relative velocity. Restoring means comprising return means also are included for returning the object from the displaced position to the base position and a comparatively low level of energy is absorbed during this return. Such shock isolation can be provided for each degree of freedom of the object within the enclosure.

3,735,953
CONCRETE BEAM FORMS

Stephen S. Dashew, Los Angeles, and Arnold Wills, Lakeview Terrace, both of Calif., assignors to La Mesa Industries, Los Angles, Calif.

Filed Apr. 22, 1970, Ser. No. 30,872
Int. Cl. E04g 11/42
U.S. Cl. 249—28 6 Claims

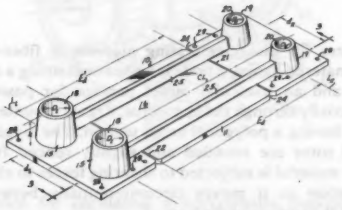


Apparatus for forming concrete beams integrally with concrete floors comprising an elongated beam form with bottom and side walls and with flanges extending outwardly from the top of the side walls. A pair of rods projected upwardly through holes in opposite flanges, are tied by a steel strap to prevent spreading of the side walls when concrete is poured into the form. After the concrete sets, the rods are pulled out, the form stripped, and the strap left in place. The elongated beam forms have end portions, where the lower walls are stepped down and the side walls stepped outwardly, and a pair of aligned beam forms is joined by an adjustment form section which lies within the stepped end portions of the beam forms.

3,735,954
GAGING DEVICE AND METHOD

Richard W. Mullin, Columbus, Ga., and David L. Robb, Sanford, Fla., assignors to Insulation Corporation of America, Columbus, Ga.

Filed Feb. 17, 1971, Ser. No. 116,139
Int. Cl. B28d 7/04
U.S. Cl. 249—91 5 Claims



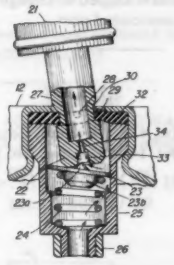
A gaging and location device and method of using same for use in locating anchor fasteners in concrete poured within a form wherein the device includes a base plate constructed and arranged to be selectively attached to the form before the concrete is poured, the base plate defining a plurality of apertures therethrough having a location corresponding to the desired spacing of the fasteners, indicator means on the base plate having a predetermined location with respect to the plurality of apertures for alignment with the inside edge of the form to selectively locate the apertures with respect to the form, and bushing means carried by the base plate about the apertures and defining a central passage therein aligned with the apertures for receiving the fasteners therein and supporting the fasteners at a predetermined location with respect to the form while the concrete is poured.

The method of using the device includes the steps of placing the concrete forms, inserting the threaded end of the fasteners through the apertures and passages in the device, threading a nut onto the end of the fastener protruding above the bushing means until the end of the fastener is flush with the outermost side of the nut, and attaching the device to the form so that the indicator means is aligned with the inside edge of the form.

3,735,955
COMBINATION TILT OR AXIALLY RECIPROCAL ACTION VALVE

David Kerr, Des Planes, Ill., and Willard S. Curtis, Brooklyn, N.Y., assignors to Precision Valve Corporation, Yonkers, N.Y.

Filed Oct. 22, 1970, Ser. No. 82,928
Int. Cl. F16k 11/00
U.S. Cl. 251—303 2 Claims

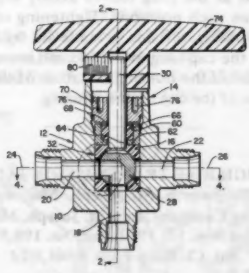


A pressurized container valve is capable of being actuated by either axial or tilting motion. Separate product passages leading to separate valve orifices are independently opened by distinct movements of the valve body to afford alternate independent paths to the discharge nozzle. These plural paths thereby prevent disabling of the container through clogging of a single orifice.

3,735,956
BALL VALVE AND IMPROVED SEAT ARRANGEMENT

Stephen Matousek, Moraga, Calif., assignor to Whitey Research Tool Co., Emeryville, Calif.

Continuation of Ser. No. 41,503, May 28, 1970, abandoned.
This application Apr. 10, 1972, Ser. No. 242,861
Int. Cl. F16k 5/06
U.S. Cl. 251—315 4 Claims



The specification and drawings show a ball valve including a housing defining a valve chamber which is of cylindrical configuration. Inlet and outlet flow passages extend into the housing and connect with the chamber. A ball member is positioned in the chamber with its center located generally at the

intersection of the axes of the flow passage and the axis of the chamber. A resilient, resinous packing completely encloses the ball and fills substantially all voids between the ball and the inner walls of the chamber. Circular ports are formed through the packing at locations aligned with the inlet and outlet passages and the center of the ball. The outer ends of the ports terminate at the inner of the chamber and about the associated passageway, whereas, the inner ends of the ports terminate adjacent the surface of the ball. A circumferential, cylindrical recess is formed inwardly from the outer end of each port and terminates closely adjacent the inner end of the port to leave a continuous circumferential lip of packing material extending radially inwardly of the port adjacent the ball. Positioned in each recess is a relatively rigid ring member having an axial opening of a diameter substantially equal to the diameter of the associated passage, and an outer diameter which engages the wall of the recess. The axial length of the ring is substantially equal to the length of the recess. Preferably, the inner end of the ring closely engages the lip, whereas the outer end is shaped to engage the inner wall of the chamber about the associated port.

3,735,957

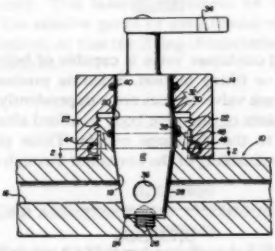
VALVE

Anderson Duggar, Jr., 4350 Delmere, Royal Oak, Mich.

Filed Oct. 14, 1971, Ser. No. 189,460

Int. Cl. F16k *25/00*

U.S. Cl. 251—330 **1 Claim**



A valve suitable for high pressure applications comprises a plug with a transverse bore which is rotatable through ninety degrees to bring the bore either into or out of registry with the conduit bore for the respective on and off positions. The plug has conically tapering portions which converge toward each end to cooperate with complimentary tapered bores in the valve housing to provide seals in the respective open and closed positions as the plug moves axially slightly during its rotation between such positions. Tightening of the valve cap on the valve housing threads is achieved by a screw which passes through the cap tangentially to and in engagement with spline-like teeth on the housing, rotation of the seated screw causing rotation of the cap on the housing.

3,735,958

HIGH RISE TRANSMISSION JACK

Elmont E. Hollingsworth, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.

Filed Nov. 15, 1971, Ser. No. 198,922

Int. Cl. B60p *1/00*; **B66f** *3/24*

U.S. Cl. 254—2 R **18 Claims**

A high rise lifting jack, for use in handling transmissions or the like, having a pair of vertically extensible members telescopically received within a housing, one of the members being pneumatically actuated and the other being hydraulically actuated. Means secured to the housing at ground level control pneumatic raising during a first stage of operation,and means disposed adjacent and traveling with a load-carrying station at the upper end of the jack control hydraulic raising of the load station during a second,subsequent operating stage.

Locking means secure the pneumatic member to the housing to positively support the load station during hydraulic raising.

3,735,959

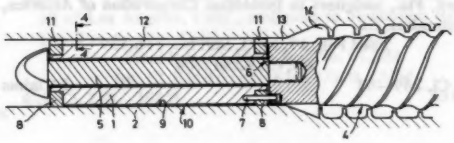
APPARATUS FOR DISAGGLOMERATING MATERIAL

Hans Keinath, Frankfurt (Main); Klaus Kroger, Offenbach (Main), and Robert Lauerbach-Lehmeier, Frankfurt (Main), all of Germany, assignors to Zimmer Aktiengesellschaft, Frankfurt (Main), Germany

Filed Oct. 13, 1970, Ser. No. 80,264

Int. Cl. B01f *7/00*; **B02c** *23/02*

U.S. Cl. 259—7 **4 Claims**



Apparatus for disagglomerating pigment in fiber-forming resinous material having a body member containing a cylindrical bore and an inlet and outlet passage for passing said material axially through the apparatus; a rotor mounted within said bore having a polygonal cross section. The ridges of the polygonal rotor are rounded and slightly spaced from the bore. The material is subjected to shearing forces to effect disagglomeration as it moves circumferentially between the ridges and the surface of the bore.

3,735,960

CONTINUOUS MIXER

Hans Albert Bosch, Streamwood, Ill., assignor to The Quaker Oats Company, Chicago, Ill.

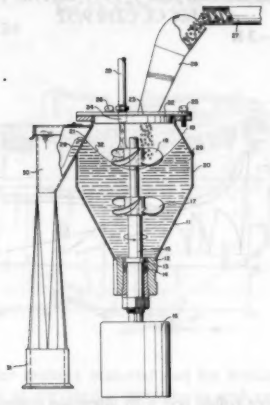
Filed Feb. 28, 1972, Ser. No. 229,690

Int. Cl. B01f *7/16*

U.S. Cl. 259—8 **4 Claims**

A continuous mixer for mixing pancake and waffle batter and the like is disclosed having a mixing vessel having a conical shaped lower section and a cylindrical shaped upper section, two downward pushing propellers in the center of the

mixer, a material removing port near the top of the mixer, means for rotating the propellers to create a vortex extending



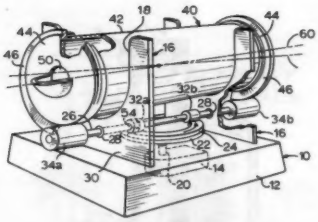
into the material removing port, and means for supplying material above the top propeller.

3,735,961

OSCILLATORY DEVICE FOR PHOTOGRAPHIC PROCESSING

Gordon George Taylor, Toronto 3, Ontario, Canada, assignor to Monrick Holdings Limited, Downsview, Ontario, Canada

Filed Feb. 22, 1972, Ser. No. 227,973
Claims priority, application Canada, Dec. 8, 1971, 129612
Int. Cl. B01f 9/00
U.S. Cl. 259—72 **6 Claims**



A device for oscillating a horizontally disposed carrier about a fulcrum centrally located on its longitudinal axis, the carrier having spaced circumferential cams. A frame locates the carrier on a horizontal rod which is rotated reciprocally by a semicircular cam on a flat disc which sequentially engages a pair of cam rollers on the rod as the disc is rotated unidirectionally.

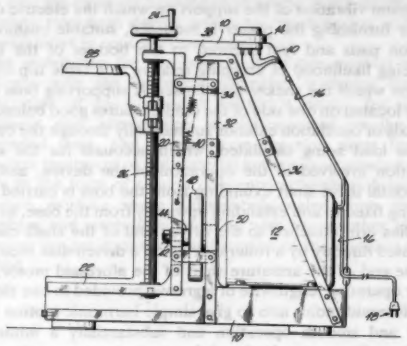
3,735,962

AUTOMATIC JAR SHAKER

Henry A. Pagano, Syracuse, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Nov. 23, 1971, Ser. No. 201,326
Int. Cl. B01f 11/00
U.S. Cl. 259—72 **1 Claim**

An electric motor drives a flywheel connected by an offset crank to a jar receiving structure free to move within the housing within limits defined by a restraining spring. The structure



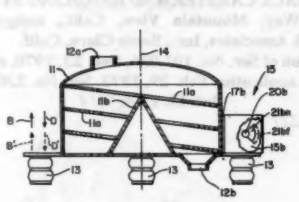
is adjustable to receive and hold different sizes of jars. A timer controls duration of motion action.

3,735,963

APPARATUS FOR AGITATING FLOWABLE MATERIAL

George D. Dumbaugh, Louisville, Ky., assignor to Vibranetics, Inc., Louisville, Ky.

Filed Nov. 11, 1971, Ser. No. 197,794
Int. Cl. B01f 11/00
U.S. Cl. 259—72 **23 Claims**



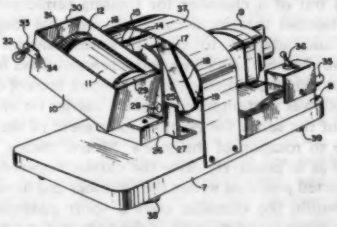
This invention provides novel apparatus for agitating flowable material. Basically, the apparatus provided by the present invention comprises generally vertically arranged container means, in combination with mounting means for supporting the container means for limited movement relative to its generally vertical axis and drive means for independently first twisting the container means about its generally vertical axis and then moving the container means along that axis such that the material is induced to move within the container means.

3,735,964

POWERED MECHANICAL SHAKER DEVICE

Robert K. Lorenzen, Box 14, Shirland, Ill.

Filed Feb. 7, 1972, Ser. No. 223,948
Int. Cl. B01f 11/00
U.S. Cl. 259—75 **10 Claims**



An open top, open end cradle for the jar containing the material to be mixed by shaking has a resilient pad in one end

cooperating with a coiled compression spring on a hinged closure at the other end that is suitably secured in closed position, as by a cross-in, is subjected to vigorous oscillation with minimum vibration of the support on which the electric drive motor furnishing the power is mounted, suitable cushioning friction pads and feet secured to the bottom of the base, reducing likelihood of creeping relative to a table top or the like on which the shaker may be set. A supporting boss centrally located on one side of the cradle assures good balance as the axis of oscillation extends substantially through the center of the load being oscillated, which accounts for the small vibration involved in the operation of the device, and the horizontal drive shaft extending from the boss is carried in a bearing fixed to and extending upwardly from the base, so that a radius arm attached to the driven end of the shaft can be operated directly by a roller carried on a driven disk mounted on the end of the armature shaft of the aforesaid motor, the roller operating lengthwise of a groove provided in one side of the aforesaid radius arm to give simple harmonic motion with quiet and smooth operation and substantially a minimum number of parts required and the maximum compactness. A generally U-shaped inverted guard carried on the base encloses the aforesaid disk and radius arm for safety in operation.

3,735,965

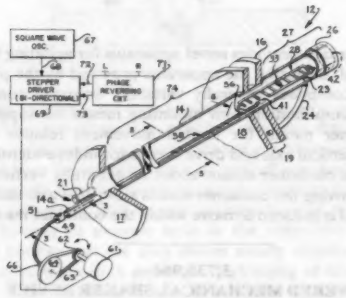
FURNACE CARRIER AND HANDLING SYSTEM

James A. Way, Mountain View, Calif., assignor to H.L. Schoger & Associates, Inc., Santa Clara, Calif.

Continuation of Ser. No. 101,036, Dec. 23, 1970, abandoned. This application Feb. 29, 1972, Ser. No. 230,500

Int. Cl. F27b 9/14

U.S. Cl. 34–227 **7 Claims**



In an impurity treatment chamber, such as a gas diffusion furnace or the like, of a type having means for passing gases into and out of a chamber for treating semiconductor elements disposed therein, a carrier is movable longitudinally thereof and adapted to support semiconductor elements within the chamber. An elongated screw mounted for rotation within the chamber adjacent to the bottom thereof cooperates with a follower portion formed on the carrier for engaging the threads of the screw for positive movement of the carrier in response to rotation of the screw. Motive means rotate the screw so as to positively drive the carrier between advanced and retracted positions within the chamber and to oscillate the carrier within the chamber over a short distance so as to preclude adhesion or sticking of the parts of the system which would otherwise make difficult the withdrawal of the carrier from the chamber.

3,735,966

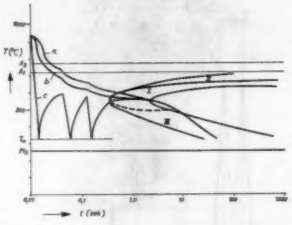
METHOD FOR HEAT TREATING STEEL WIRE ROD

Bernd Hoffmann, Duesseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Continuation of Ser. No. 743,101, July 8, 1968, abandoned. This application June 7, 1971, Ser. No. 150,806

Int. Cl. C21d 9/52

U.S. Cl. 266—3 R **3 Claims**



Patenting hot-rolled rod with alternate quenching and heat compensation stages before transformation; the quenching stations decrease logarithmically and the compensation stages increase logarithmically; the surface of the rod reaches is cooled down to below about 400°C, and the rod begins to transform in the pearlite zone before full temperature equalization, the rod being reeled when a substantial peripheral zone of the rod has been predominantly transformed to pearlite.

3,735,967

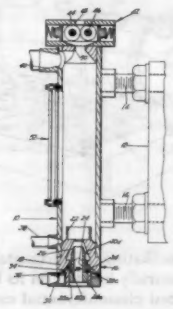
WATER QUENCH METHOD AND APPARATUS

Ronald D. Brown, and Marvin L. Stark, both of Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Sept. 15, 1971, Ser. No. 180,803

Int. Cl. C21d 1/62

U.S. Cl. 266—3 R **11 Claims**



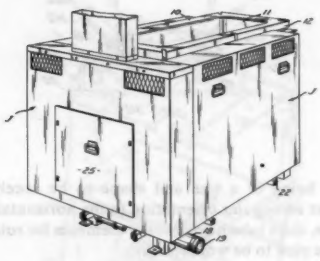
Method for liquid quench cooling a heated strand moving in a vertical path of travel by providing a variable height water column through which the strand passes. The column is completely supported by air under pressure so that there is no mechanical apparatus in contact with the heated strand until after it emerges from the water in the column.

The apparatus includes a chamber provided with aligned openings in its top and bottom through which the strand passes with substantial clearance in a vertical path of travel. A cooling fluid is introduced into the chamber and is supported by air under pressure admitted to the chamber adjacent the bottom thereof and surrounding the bottom opening.

3,735,968
FURNACE

Max W. Pearch, Novelty, Ohio, assignor to Rex Products, Inc., Chesterland, Ohio

Filed July 12, 1971, Ser. No. 161,595
Int. Cl. F27b *14/00*
U.S. Cl. 266—24 **6 Claims**

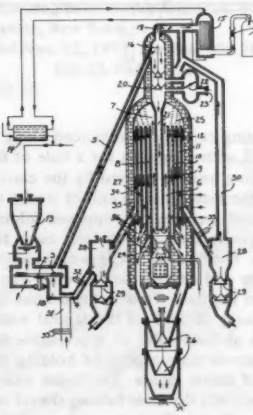


A furnace for melting material and for holding molten or liquid material at elevated temperatures and consisting of a pot heated directly by banks or arrays of gas-fired infrared burners normally closely spaced from and directed at the outer surface of the pot. The banks of burners are movable toward and away from the pot for easy inspection, maintenance, and adjustment, even during operation.

3,735,969
METHOD OF THERMAL AND CHEMICAL TREATMENT OF FINELY-DIVIDED MATERIALS

Lev Petrovich Brusov, bulvar Shakhtostroitelei, 22, kv. 32, Donetsk; Dmitry Pavlovich Vasilevsky, ulitsa Pravdy, 5, kv. 9, Kharkov; Vasily Ivanovich Dorokhov, ulitsa Dzerzhinskogo, 34, kv. 6, Kharkov, and Vasily Petrovich Onoprienko, ulitsa Sumskaya, 118, kv. 16, Kharkov, all of U.S.S.R.

Division of Ser. No. 52,196, July 6, 1970. This application Aug. 13, 1971, Ser. No. 171,766
Int. Cl. F27b *1/04*
U.S. Cl. 266—24 **4 Claims**



The invention relates to the branches of industry in which finely-divided materials are subjected to thermal and chemical treatment in a flow of gas.

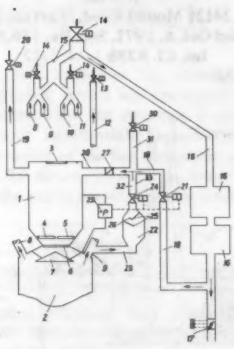
The method of thermal and chemical treatment of finely-divided materials according to the invention is characterized in that it includes the preparations of gas-suspended matter from the material and gas, conveyance of the material in the gas-suspended state accompanied by concurrent partial treatment with gas, gas-dynamic classification of the material, then its complete treatment during which the working gas and and material move in contrary directions.

The installation for the realization of this method in accordance with the invention comprises a device for the preparation of gas-suspended matter, a device for partial treatment and conveyance of the material in the gas-suspended state, and a multistage reaction plant for the complete treatment of the material in the gas-suspended state, made in the form of several concentric chambers forming a common working space hermetically-sealed from the atmosphere and intercommunicating with one another via the chamber for gas-dynamic classification of the material being treated.

3,735,970
METHOD AND APPARATUS FOR EQUALIZING THE GAS PRESSURES OF SLUICE CHAMBERS AND FURNACE ZONES OF SHAFT FURNACES, PARTICULARLY BLAST FURNACES

Ulrich Genge, Monclova Coah, Mexico, assignor to Demag AG, Duisburg, Germany

Filed Apr. 14, 1971, Ser. No. 133,895
Claims priority, application Germany, Apr. 4, 1970, P 20 16 205.4
Int. Cl. F27b *1/12*
U.S. Cl. 266—27 **9 Claims**



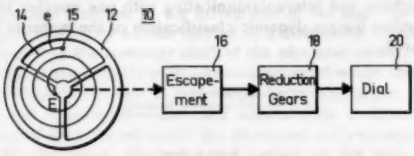
In such a pressure equalizing method in which raw top gas from the furnace zone is first purified and then fed into the sluice chamber, in a first pressure equalizing stage, the sluice chamber is filled with purified top gas directly from the purification zone, as from a purifier which the raw top gas is fed. In a second pressure stage, there is added, to the sluice chamber, a relatively small volume of top gas at furnace pressure to complete pressure equalization between the sluice chamber and the furnace zone. This latter top gas is drawn from a storage space communicating with the furnace zone and provided with labyrinth means effecting removal of dust from the top gas. A conduit, provided with a check valve, communicates with the sluice chamber, and a first line, connected to the purifier and provided with a control valve, and a second line, connected to the storage space and likewise provided with a control valve, are connected in parallel to the conduit communicating with the sluice chamber. A control device controls the sequential operation of the two control valves in the first and second lines.

3,735,971

STRAINABLE MEMBERS EXPOSED TO TEMPERATURE VARIATIONS AND MATERIALS THEREFOR

Samuel Steinemann, 4410 Liestal, Switzerland, assignor to Institut Dr. Ing. Reinhard Straumann A.G., Waldenburg, Switzerland

Continuation-in-part of Ser. No. 728,422, May 13, 1968, abandoned. This application Dec. 14, 1970, Ser. No. 97,923
Claims priority, application Switzerland, May 13, 1967, 6802/67
Int. Cl. F16f 1/04
U.S. Cl. 267—182 23 Claims



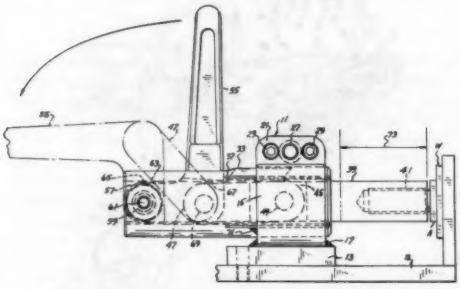
A temperature-stable strainable member is formed of an antiferromagnetic alloy having a low temperature-coefficient of the modulus of elasticity. The member may be embodied in a mechanical oscillator as a vibratory element with a modulus of elasticity whose temperature coefficient is between $-10 \cdot 10^{-6}$ and $+10 \cdot 10^{-6}$ centigrade and which is composed of 20 – 29 percent manganese, 2 – 9 percent chromium, 0.03 – 1 percent carbon, the remainder iron with ordinary impurities less than 1 percent.

3,735,972

PUSH/PULL PLUNGER CLAMP WITH TAKE UP FOR WEAR

Leland F. Blatt, 24121 Mound Road, Warren, Mich.

Filed Oct. 6, 1971, Ser. No. 186,954
Int. Cl. B25b 1/14, 5/12
U.S. Cl. 269—228 4 Claims



In a toggle action plunger clamp having a base assembly and a sleeve in which to mount an elongated body, a reciprocable work piece engaging plunger in the body and a cantilever handle operated link to reciprocate said plunger, the improvement providing a split contractable sleeve. The plunger body has a series of longitudinal slits and is also contractable on contraction of said sleeve for maintaining a uniform non-wobbly sliding fit between the plunger and body.

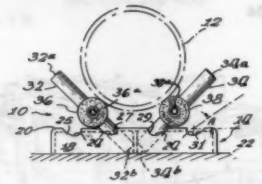
3,735,973

PIPE SUPPORT

William E. Petrie, c/o Economy Design Inc. 5003 West 159th St., Tinley Park, Ill.

Continuation-in-part of Ser. No. 834,669, June 19, 1969, abandoned. This application Oct. 15, 1971, Ser. No. 189,638
Int. Cl. B23q 3/00; F16l 3/00
U.S. Cl. 269—296 9 Claims

A pipe support assembly for holding pipe to be worked upon including a generally inverted V-shaped base with the top of the base defined by the apex thereof. Plural openings are formed in the top on an axis inclined relative to the intended horizontal positioning of the base. A pair of tubes are



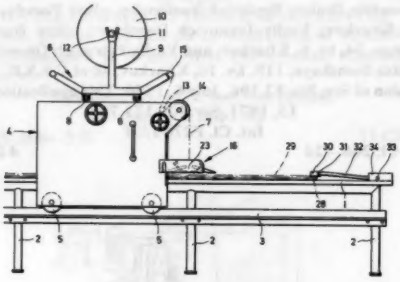
provided, being of a size and shape to be received in the openings at an angular orientation to the horizontal during intended use, each tube having roller elements for rotatably supporting the pipe to be worked upon.

3,735,974

APPARATUS FOR FOLDING FABRIC MATERIAL IN LAYERS

Gunter Otto Stumpf, Kreis Muningen, 7421 Mehrstetten, Germany

Filed Dec. 21, 1970, Ser. No. 100,094
Claims priority, application Germany, Oct. 12, 1970, P 70 37 650.0
Int. Cl. B65h 29/46
U.S. Cl. 270—31 6 Claims

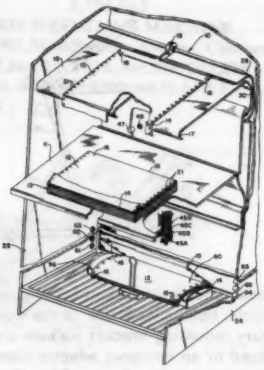


A reciprocating carriage is advanced along a folding table and is provided with a support for a bale of fabric to be unwound. A folding head is carried by the carriage for folding the fabric on the table at each end of stroke of the carriage. The folding head includes two opposed folding shovels supported by opposite lateral walls and each tiltable about a horizontal axis. The free lower edges of the shovels are aligned with each other and define a longitudinal gap for passage of the fabric from the bale. Two inclined arms are mounted on the inner surfaces of each of the lateral walls for engaging guiding rollers at both sides of a pivotable fabric clamping beam which serves the purpose of holding the ends of the folded stack of fabric layers. The beam extends across the folding table and lifts the front folding shovel at the same time that the beam is being lifted. A gap is provided between the upper ends of the arms at each lateral wall permitting the guiding rollers to drop therebetween, and secured to the walls below the gap is a stop bar for catching the fabric clamping beam at such an elevation that a slot is provided between the lower side of the clamping beam and the upper side of the unlifted folding shovel permitting a loose support of the fabric in the slot.

3,735,975
APPARATUS FOR FAN FOLD STACKING CONTINUOUS STRIPS OF MATERIAL

Gerald J. Sukel, and Jacob C. Rubin, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 2, 1971, Ser. No. 130,674
Int. Cl. B65h *45/00*
U.S. Cl. 270—61 F 7 Claims

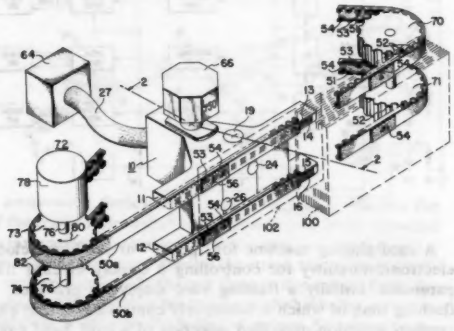


Apparatus is described for stacking strip material that has been folded in opposite directions, e.g. computer output, by directing sequentially a plurality of fluid jets to position the outfolds of the strip material as it falls into an output receptacle. In particular, the apparatus for stacking includes a plurality of fluid valves located at spaced intervals along a fall plate. A first detector senses the leading edge of the continuous strip material and activates a first timing circuit which controls the energization of a selected fluid valve. A second timing circuit controls the duration of the energization of the fluid valve and a second detector determines the stack height of the strip material in the output receptacle and thereby controls which fluid valve will be energized.

3,735,976
DOCUMENT PICKER

James Power Watson, Palm Beach Gardens, Fla., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 12, 1971, Ser. No. 198,108
Int. Cl. B65h *3/12*
U.S. Cl. 271—26 ES 4 Claims

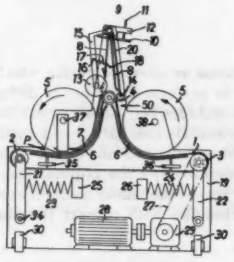


Vacuum-operated document picking and transporting apparatus includes a moving belt formed with two rows of apertures therein extending in the length direction of the belt either row of which may be coupled to a vacuum source. Apertures in one row may be located at different positions than those in the other and the apertures in one row may be spaced apart different distances than those in the other. Then as a portion of the belt containing an aperture passes between a stack of documents and the vacuum source, a document may be separated from the stack and transported by the belt. The phasing of the pickup and/or the number of documents picked up in a given interval of time may be changed without changing the belt speed by switching the vacuum to the other row of apertures.

3,735,977
METHOD AND APPARATUS FOR TURNING FLAT STRUCTURES, ESPECIALLY NEWSPAPERS

Walter Reist, Zurich, Switzerland, assignor to Ferag, Fehr & Reist AG, Hinwil, Switzerland

Filed July 12, 1971, Ser. No. 161,704
Claims priority, application Switzerland, July 16, 1970, 10855/70
Int. Cl. B65h *29/16*
U.S. Cl. 271—75 10 Claims

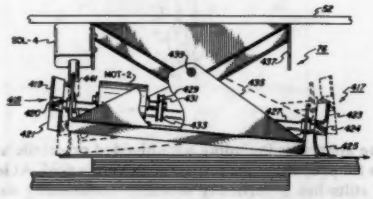


A method of, and apparatus for, turning flat structures, especially newspapers, which are conveyed by a conveying mechanism, wherein each flat structure is erected in a plane which is disposed substantially transverse to the main direction of conveying of the flat structures, and then further conveying such flat structures with the lower portion thereof bearing against the conveying mechanism leading.

3,735,978
METHOD AND APPARATUS FOR STACKING COPY SHEETS

Lyman H. Turner, Pittsford, and Rhinehart A. Manzek, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 9, 1970, Ser. No. 70,736
Int. Cl. B65h *29/22*
U.S. Cl. 271—88 6 Claims

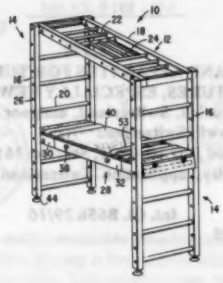


A system for producing finished sets of collated copies from precollated documents fed and copied in repeated cycles including a side stacking assembly for grouping sheets into separately identifiable stacks by the action of pivotable paddle wheels. A control logic enables side stacking the sheets into separately identifiable bundles.

3,735,979
EXERCISE DEVICE ADAPTABLE TO PERMIT THE PERFORMANCE OF A PLURALITY OF DIFFERENT EXERCISES

Kay W. Levenberg, 2844 28th St. N. W., Washington, D.C.

Filed Apr. 28, 1970, Ser. No. 32,620
Int. Cl. A63b *21/00*
U.S. Cl. 272—58 4 Claims



There is disclosed an exercise device which is adaptable to permit the user to perform a number of different and varying exercises which includes two ladder assemblies provided with a number of horizontal cross bars, a bed-shelf assembly, and a grip-bar assembly positioned above the bed-shelf assembly, the bed-shelf assembly and the grip-bar assembly being supported between and by the ladder assemblies and positioned at any desired inclination with respect thereto and with each other.

3,735,980
STILT BALL GAME APPARATUS

Robert E. Weiss, 809 W. Genesee Avenue, Saginaw, Mich.

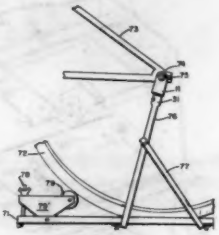
Filed July 23, 1970, Ser. No. 57,561
Int. Cl. A63b *25/00*
U.S. Cl. 272—70.1 3 Claims

Game apparatus including a multi-sided projectile and a set of stilts for propelling the projectile toward a goal. At least one of the stilts has a vertically movable horizontally extending kicking member adjacent the lower portion thereof for engaging the projectile at selected distances above the ground. The kicking member is ellipsodal and has a ground engageable rocker portion which, in the lowermost position, serves as a training aid for assisting one learning to walk with the stilts by providing lateral support for the stilt when it is tilted from a vertical position.

3,735,981
EXERCISER ADAPTOR STAND FOR DETACHABLY RECEIVING THE REAR PORTION OF A BICYCLE

Sidney Mallin, 236 Kingston Row, Winnipeg, Manitoba, Canada

Filed Dec. 23, 1971, Ser. No. 211,410
Int. Cl. A63b *69/16*
U.S. Cl. 272—73 4 Claims



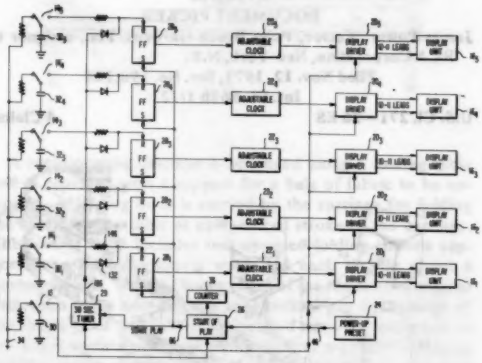
Two identical mounting brackets are connected to the back axle of a bicycle, one on each side of the bicycle frame. Two complementary mounting bracket sockets are located at the top of the stand of an exerciser adaptor stand for a bicycle. The bicycle is connected to the stand by pivoting the mounting bracket sockets onto the mounting brackets, and disconnected from the stand by pivoting the mounting bracket sockets off of the mounting brackets.

This mating arrangement of the mounting brackets and the sockets of the adaptor stand eliminates the need for a tool each time the stand is secured to the bicycle and disconnected from the bicycle.

3,735,982
ELECTRONIC CARD GAME MACHINE

Jay N. Gerfin, 636 Jefferson Avenue, Cherry Hill, N.J.

Filed Mar. 29, 1972, Ser. No. 239,057
Int. Cl. A63f *9/00, 1/00*
U.S. Cl. 273—1 E 19 Claims



A card playing machine for "poker" or the like including electronic circuitry for controlling a display of card transparencies. Initially a flashing card display is provided, the flashing time of which is selectively controlled so that either random selection or skilled selection of a card hand can be made by a player. A hand is normally obtained by the sequential operation of a plurality of manually depressed push-buttons. The control circuitry, moreover, will terminate operation and display a randomly selected hand if the player does not make his selection within a predetermined playing time.

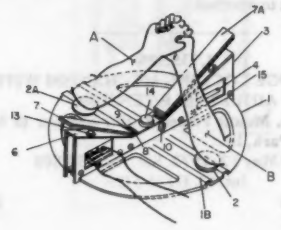
Additionally, electronic control means are also included for allowing the player to reject or "discard" one or more of the cards in the hand initially displayed and reselect or "draw" new cards in another predetermined time period in an effort to improve the card hand. Another embodiment of the invention discloses control circuitry which provides the player an option to play a game other than poker which may be, for example, "black-jack" or "twenty-one."

3,735,983

ARM WRESTLING MACHINE

James J. Ortiz, 705 Montgomery Avenue, Cumberland, Md.

Filed Jan. 11, 1971, Ser. No. 105,296
Int. Cl. A63f 9/00; A63b 67/00
U.S. Cl. 273—1 E 1 Claim



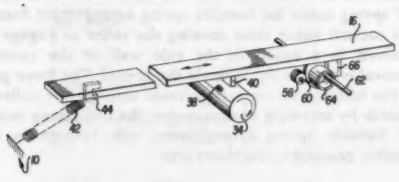
An electrical amusement device including a circular base having two guides or tracks for adjustably supporting elbow pads which provide support for contestants' elbows with the adjustment on the rails compensating for the length of a person's forearm. Pressure pads are provided on the right and left of the opponents on a slight angle above the base plate. A hand grip in the form of a round bar is provided under the pressure pad thus eliminating any leverage advantages contestants may use on one another. The opponents pit their strength against one another until one opponent puts the others back of the hand down on the pressure pad, at which time a contact button under the pressure pad will actuate a signal device to designate a win.

3,735,984

RACETRACK AMUSEMENT DEVICE

Kiyozi Asano, Sumida-ku, Tokyo, Japan, assignor to Shinsei Kogyo Co. Ltd., Tokyo, Japan

Filed Mar. 24, 1972, Ser. No. 237,731
Int. Cl. A63f 9/14
U.S. Cl. 273—86 E 4 Claims



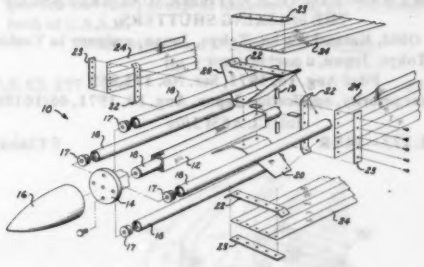
An amusement device simulating a racetrack wherein the top of the frame is provided with a plurality of strips mounted for reciprocating movement. A motor and gear train rotate a rod positioned transversely below the strips, the rod being provided with spokes which contact flanges depending from the strips sequentially moving the strips which thereafter return to their original position by the action of springs. Simultaneously, the motor and gear train rotate a plurality of gears provided with offset bearing surfaces against which other flanges depending from the strips bear. Since the offset bearing surfaces are staggered, the distance of the return stroke of each strip varies. A racing figurine, for example, a horse, is positioned on each of the strips. As the stroke of each reciprocating strip continuously varies, the speed of each racing figurine continuously varies. In this manner the results of each race are new providing a source of continuing amusement for the user, adult or child.

3,735,985

ROCKET PROPELLED TARGET

Gerard E. Layer, Newport Beach; John A. Kreuzer, Mission Viejo, and John S. Yates, Placentia, all of Calif., assignors to The Susquehanna Corporation, Fairfax County, Va.

Filed Oct. 15, 1970, Ser. No. 80,874
Int. Cl. F41j 9/06
U.S. Cl. 273—105.4 16 Claims



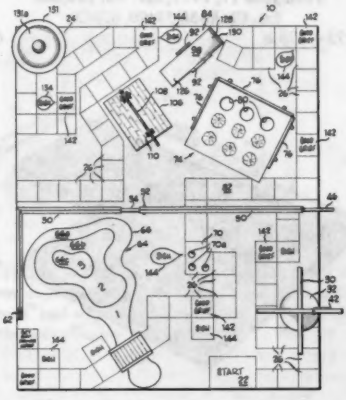
A rocket vehicle suitable for use as an airborne training target is disclosed. The vehicle frame is manufactured of aluminum or other lightweight material having high structural strength and includes a longitudinally extending elongated center member to which are attached a nose cone, fin sections and one or more rocket motors. Attached to the rear of the vehicle are a series of lightweight banners. By varying the length of the banners and the number of rocket motors, visual cross-section as well as the performance characteristics of the vehicle may be varied. The rocket vehicle may be adapted for firing of the rocket motors in sequence with the time of firing controlled in order to obtain sustained high velocity flight over an extended range or to vary the performance of the vehicle during flight.

3,735,986

BOARD GAME APPARATUS

Marvin I. Glass; Joseph Burck, and Andras Race, all of Chicago, Ill., assignors to Marvin Glass Associates, Chicago, Ill.

Filed May 14, 1971, Ser. No. 143,484
Int. Cl. A63f 3/00
U.S. Cl. 273—134 G 4 Claims



A game device of the type including playing pieces, a playing board, a chance device for random chance advancement

of the playing pieces along the board, with the playing board having simulated hazards positioned on the game board in the playing piece path of travel which must be successfully traversed or completed by a player during advancement of the playing piece from a starting point to a completion point. Auxiliary playing piece support members are provided for temporary attachment to the playing pieces for assistance in traversing some of the hazards, said hazards including a partition extending across the board along which a playing piece may move.

3,735,987

AUTOMATIC ROTATION INDEXING AND MASKING OF DRUM CHANGE DEVICE WITH MANUAL RELEASE OF THE MASKING SHUTTERS

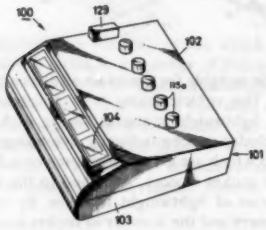
Haruo Ohki, Katsushika-ku, Tokyo, Japan, assignor to Yoshie Ito, Tokyo, Japan, a part interest

Filed Aug. 16, 1971, Ser. No. 171,969

Claims priority, application Japan, Aug. 13, 1971, 46/16186

Int. Cl. A63f *5/04*

U.S. Cl. 273—143 R **5 Claims**



A toy game machine is disclosed which includes a plurality of rotatable display drums each bearing suitable combinations of symbols on its peripheral surface and as many display windows as there are such drums for exposing to view therethrough the symbols which have been concealed during rotation of the drums by shutters which automatically mask during rotation and indexing of the drums and which are individually released by manual actuation of the operator.

3,735,988

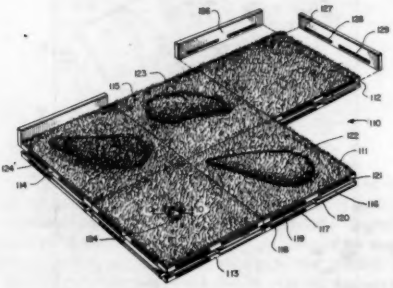
PRACTICE PUTTING SURFACE

Donald J. Palmer; Mark L. Palmer, and Irwin A. Breinin, all of 3962 Bel Pre Road, No. 6, Silver Spring, Md.

Filed June 17, 1971, Ser. No. 154,008

Int. Cl. A63b *57/00, 67/02*

U.S. Cl. 273—178 B **6 Claims**



A practice putting surface for indoor and outdoor use by a golfer having a plurality of individual putting sections of identical rectangular configuration, each section having four sides and a base portion with upper and lower surfaces, some with raised and/or depressed surfaces and detachable border sections. There is a friction pad mounted on the bottom surface of each base portion to prevent sliding. A layer of synthetic artificial turf covers the upper surface of each base board and has synthetic grass of different heights extending upwardly therefrom. There are female and male Velcro fastening means located on each side of each section and interchangeable cups and insert pieces whereby the individual sections may be put together in any given order to fasten any desired putting configuration to simulate the natural putting green on a golf course. An undulating putting surface may be provided by locating a slidable elevated member under the turf. The elevated member may include a handle which extends through a slotted portion in a putting section, whereby the elevated member may be manually moved and rotated from one position to another.

3,735,989

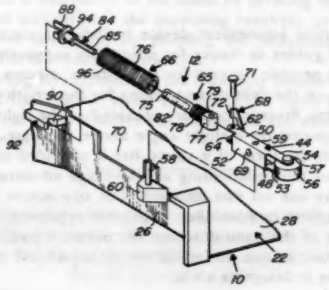
CARTRIDGE LOCKING MECHANISM WITH ADJUSTABLE TENSION

Donald J. Dattilo, Mount Prospect, Ill., assignor to Motorola Inc., Franklin Park, Ill.

Filed May 12, 1972, Ser. No. 252,809

Int. Cl. G11b *5/00*

U.S. Cl. 274—4 B **6 Claims**



A cartirdge locking mechanism for a tape player includes a roller arm mounted for pivotal movement on a first mounting member and a bistable spring arrangement including a coil spring and a threaded pin, the former being screwable onto the latter, coupled between the roller arm and a second mounting member to operate the roller arm between two stable positions. A leaf spring connected to the roller arm extends into a cartridge receiving tunnel of the tape player for deflection by a cartridge inserted thereinto. Deflection of the leaf spring snaps the bistable spring arrangement from a first to a second stable state causing the roller to engage and be received in a notch in the side wall of the cartridge to removably secure the latter in the tunnel. The force provided by the bistable spring arrangement through the roller, is adjustable by screwing or unscrewing the coil spring member of the bistable spring arrangement with respect to the pin member coupled to the roller arm.

3,735,990

SEALING STRUCTURE FOR ROTARY MOTION TRANSMITTING DEVICE

Helmut Steegmuller, Affalterbach, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 25, 1971, Ser. No. 156,841

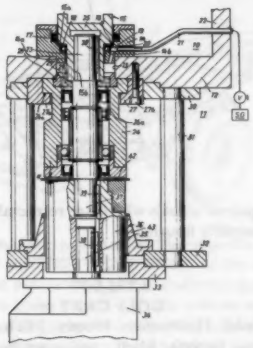
Claims priority, application Germany, June 26, 1970, P 20 31 608.9

Int. Cl. F16k *41/08*; **F16j** *15/10*

U.S. Cl. 277—8 **4 Claims**

A sealing structure for a system which rotates a driven coupling member in a contaminated compartment has a sleeve

which extends into an opening of a wall of the cell defining the contaminated compartment and has an internal annular shoulder sealingly engaging an external shoulder of the driven coupling member in the compartment. The driven coupling member has an axial bore which is sealed from the contaminated compartment and can receive a torque-transmitting part of a second coupling member which is located without the compartment and is driven by a motor through the intermediary of a clutch. The sleeve is in sealing engagement with



the wall, and the likelihood of leakage between the sleeve and the driven coupling member is further reduced by the provision of one or more packings, U-rings and/or liquid seals. The two shoulders bear against each other to prevent leakage of contaminating matter from the compartment when the second coupling is detached. The opening in the wall is evacuated prior to detechment of the second coupling member and remains evacuated until after attachment of a fresh second coupling member.

3,735,991

STUFFING BOXES

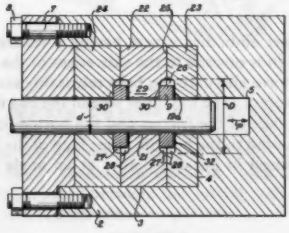
Hugo Nobs, Basel, Switzerland, assignor to Maschinenfabrik Burckhardt AG, Basel, Switzerland

Filed Apr. 7, 1971, Ser. No. 132,161

Claims priority, application Switzerland, Apr. 7, 1970, 5128/70

Int. Cl. F16j *15/16, 15/40*

U.S. Cl. 277—27 **13 Claims**



The stuffing box comprises a chamber having gland rings adapted to fit therein. The gland rings are tightly held within the gland chamber by a movable neck that compresses the gland ring within the gland chamber. At least one packing ring chamber is formed between adjacent gland rings. The packing ring chamber accommodates a packing ring means that engages the member which reciprocates within the gland chamber. The packing ring chamber is formed by a first cavity portion located in one of the adjacent rings and a second cavity portion located in the other of the adjacent gland rings. Sealing surfaces are provided on each of the adjacent gland rings and cooperate with the surface of the packing ring means to effect the desired seal within the packing ring chamber. That is, the packing ring chamber accommodates the packing ring means. The sealing surfaces are not in the same plane with the line of contact formed between the adjacent gland rings.

3,735,992

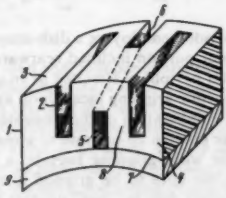
PISTON RING

Igor Semenovich Prostorov, poselok Krivka, ulitsa Festivalnaya, 3, kv. 3, Leningradskaya oblast, and Vladimir Sergeevich Davydov, prospekt Smirnova, 6, kv. 21, Leningrad, both of U.S.S.R.

Filed Mar. 14, 1972, Ser. No. 234,522

Int. Cl. F16j *9/08*

U.S. Cl. 277—215 **2 Claims**



The present invention relates to piston machines and, more particularly, to piston rings.

The piston ring 1 has blind slots 2 and slots 5 which form channels. The blind slots 2 open on the outer surface 3 and on the face surface 4. The slots 5 are made from inside of the ring 1 and form channels which open on the face surfaces 4 and 6 and on the outer surface 3. The spaces between the adjacent slots 2 and 5 form flexible bridges.

3,735,993

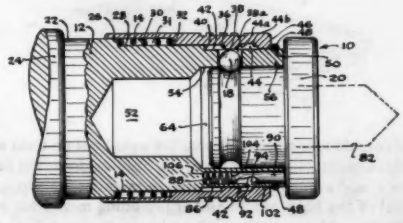
SELF-RELEASE AND RELOAD TOOLING DEVICE

Warren F. Seibert, c/o Seibert and Sons, Inc., Chenoa, Ill.

Filed Apr. 26, 1971, Ser. No. 137,175

Int. Cl. B23b *31/22*

U.S. Cl. 279—1 B **11 Claims**



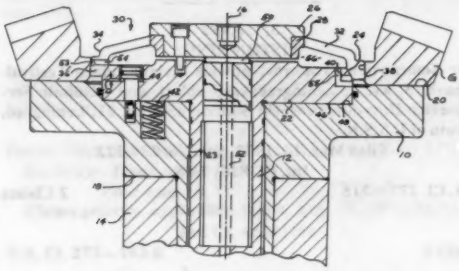
A self-release and reload tooling device having a tool body, an adaptor nut for receiving a tool implement, a spring biased outer sleeve, and a spring biased release, whereby upon insertion of the adaptor nut in the tool body, the spring biased release is actuated freeing the outer sleeve which locks the adaptor nut to the tool body, and where upon manually sliding the outer sleeve back, the spring biased release is reset permitting removal of the adaptor nut, with the tool body then remaining in a position of readiness to receive and lock the next adaptor nut inserted in the tool body.

3,735,994

WORK HOLDING CHUCK AND ARBOR

Edwin C. Jaehn, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.

Filed Dec. 6, 1971, Ser. No. 205,220
Int. Cl. B23b *31/40*; **B23f** *23/06*
U.S. Cl. 279—1 G **12 Claims**



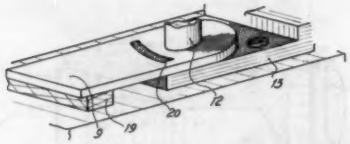
A chuck is provided employing a dish-shaped arbor with an elongated shoulder portion inclined rearwardly from a collar section to an outer periphery attached to an upstanding flange portion having a work-gripping face. Upon axial flexure of the arbor, the novel combination of the elongated shoulder and a tapered expander portion co-operate to impart parallel radial expansion of the work-gripping face to a workpiece bore thereby causing the bore to be gripped in substantially full-area abutment rather than in "line" contact as in prior art arbors. Also provided are air passages for supplying air under pressure to an annular groove in the surface of the work-gripping face to prevent possible entry of abrasive particles from entering between the work-gripping face and the work-piece bore.

3,735,995

REAR HOLDING DEVICE FOR SKI BOOTS

Georges P. J. Salomon, 34, Avenue de Loverchy, Annecy, France

Division of Ser. No. 789,680, Jan. 8, 1969. This application June 21, 1970, Ser. No. 155,107
Claims priority, application France, Jan. 10, 1968, 68135562; Dec. 20, 1968, 68109474
Int. Cl. A63c *9/00*
U.S. Cl. 280—11.35 T **5 Claims**



A pivotable rear holding device for a ski boot on a ski which includes a pivotable jaw for vertically holding down the heel of the boot, and a horizontally pivotable member for supporting the heel of the boot, said member including means for elastically bringing the member back to its median position of rest after a lateral motion.

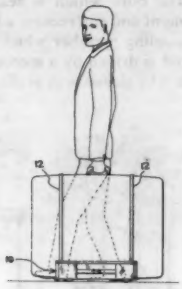
3,735,996

PORTABLE LUGGAGE DOLLY

Virgil K. Rath, c/o Rath Manufacturing Co., Janesville, Wis.

Filed Feb. 15, 1972, Ser. No. 226,495
Int. Cl. B62d *21/18*
U.S. Cl. 280—35 **4 Claims**

A portable wheeled vehicle for moving luggage such as suitcases, trunks and the like. The vehicle has a pair of elongate side support elements connected by a pair of flexible attaching straps which encircle the luggage. The side support elements



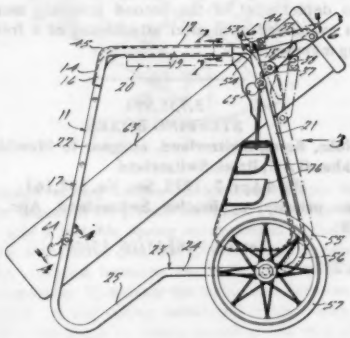
each have a pair of wheels which are retractable into a protective wheel assembly housing.

3,735,997

GOLF CART

Paul F. Seibold, Huntington Woods, Mich., and Alfred H. Haberstump, Detroit, Mich., assignors to said Seibold, by said Haberstump

Continuation of Ser. No. 10,488, Feb. 11, 1970, abandoned. This application Nov. 24, 1971, Ser. No. 198,005
Int. Cl. B62b *1/00*
U.S. Cl. 280—36 C **9 Claims**



The golf cart embodies a seat having a tubular frame on each side which is pivoted to the side edges of the seat and so formed as to have golf carrying bags releasably secured to opposite sides thereof. The top inner side of the bag is secured to the top outer face of the frames and the bottom outer side of the bags is secured to the bottom inner face of the frames with the bags disposed in parallel planes at an angle of approximately 45°.

3,735,998

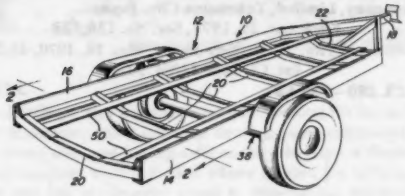
TRAILER FRAME CONSTRUCTION

Leon K. Green, 568 West 2nd St., South, Salt Lake City, Utah

Filed Mar. 5, 1971, Ser. No. 121,363
Int. Cl. B62f *21/02*
U.S. Cl. 280—106 T **6 Claims**

A vehicle frame construction including opposite side longitudinal members interconnected by means of longitudinally spaced and transversely extending cross-beams secured therebetween. The side beams or members each include upstanding or outside flanges having inwardly projecting

generally horizontal lower flange portions and upstanding upper flange portions supported along the upper edge portions from the upper marginal portions of the outside flanges and including lower marginal edges spaced inwardly of the corresponding outside flanges and spaced above the corresponding lower flange portions. The cross-beams extend between and have their ends abutted against the opposing surfaces of the outside flanges and secured thereto by welding. The lower marginal edges of the upper flanges abut and are welded to the



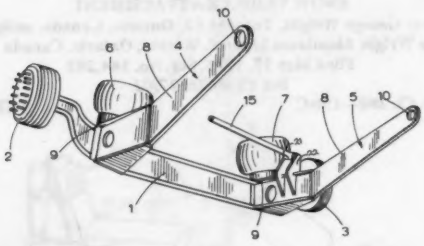
adjacent upper surface portions of the opposite ends of the cross-beams and the inner edge portions of the lower flange portions abut and are secured to the undersurfaces of the opposite ends of the cross-beams with the remote marginal portions of the lower flanges spaced below the adjacent undersurfaces of the cross-beams whereby strength at the junctures of the opposite ends of the cross-beams and longitudinal members is afforded without extreme rigidity thus providing a frame which is strong and yet capable of flexure under extreme and shock loads without failure.

3,735,999

MOTOR VEHICLE SUSPENSIONS

Keith Blackledge, Longton, and Harold Rushton, New Longton, both of England, assignors to British Leyland Truck and Bus Division Limited, Leyland, Lancashire, England

Filed Aug. 13, 1971, Ser. No. 171,712
Int. Cl. B60p *1/16*
U.S. Cl. 280—124 F **3 Claims**



The front rigid axle of a public service vehicle is located by two leading arms. The leading end of each arm is rigidly attached to the axle and the trailing end is pivotably attached to the vehicle body. Suspension elements, such as air or coil springs, are interposed between the vehicle body and the axle and leading end of each arm.

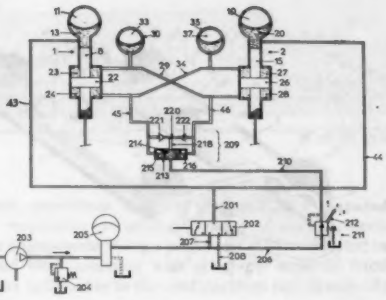
3,736,000

AUTOMOBILE SUSPENSION

Rene Capgras, Paris, France, assignor to Industrial Development Company Establishments, Vaduz, Liechtenstein

Filed Feb. 17, 1971, Ser. No. 116,195
Claims priority, application France, Feb. 24, 1970, 7006442
Int. Cl. B60g *17/04*
U.S. Cl. 280—124 F **8 Claims**

Two parallel road wheels of an automotive vehicle are loaded by the pistons of respective jacks each having a cylinder with a main chamber connected to a main pressure accumulator, an upper ancillary chamber and a lower ancillary chamber, the ancillary chambers of the two jacks being cross-connected by pipes provided with respective ancillary pressure accumulators. Oil under pressure is supplied to the main chambers under the control of a distributor responsive to



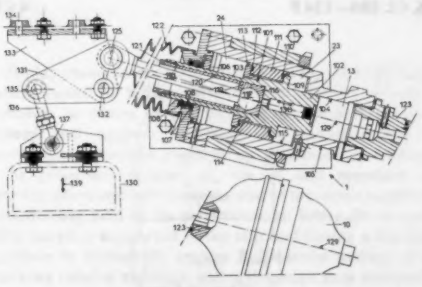
changes in static load and, independently thereof, is delivered to the ancillary chambers by way of a slide valve cutting off the supply upon a tilting of the vehicle giving rise to a substantial pressure differential between the two cross-connecting pipes. The slide valve is in series with a pressure selector manually settable to different oil pressures corresponding to different levels of the vehicular center of gravity.

3,736,001

AUTOMOBILE SUSPENSION

Rene Capgras, 51 rue du Rocher, Paris, France

Filed Feb. 17, 1971, Ser. No. 116,196
Claims priority, application France, Feb. 24, 1970, 7006441
Int. Cl. B60g *11/26*
U.S. Cl. 280—124 F **10 Claims**



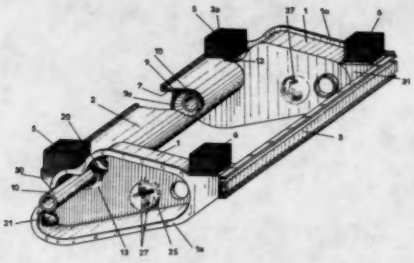
A hydraulic jack, forming part of a hydropneumatic suspension for an automotive vehicle, comprises a cylinder with two end portions of relatively small inner diameter and an intermediate portion of relatively large inner diameter, the latter being subdivided into two chambers by a closely fitting piston head formed as a transversely shiftable ring on a piston body. The ring is bracketed between two shoulders on the piston body, one of them being formed by a detachable collar, and has annular grooves in its end faces occupied by annular gaskets which contact the confronting faces of the collars to form a fluidtight joint. The extremities of the piston body are in fluidtight contact with the reduced end portions of the cylinder, one of these end portions forming a further fluid chamber; the opposite piston is hollow and accommodates a piston rod universally jointed within the piston body at the level of its shiftable ring.

3,736,002

AXLE WITH INDEPENDENT WHEELS

Albert Grosseau, 92 Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

Filed Feb. 16, 1971, Ser. No. 115,403
Claims priority, application France, Feb. 18, 1970, 7005877
Int. Cl. B60g 11/64
U.S. Cl. 280—124 F 9 Claims



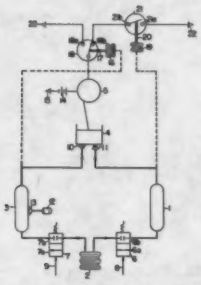
An axle wherein the independent wheel carriers each rock around a transverse longitudinal member adapted to rock inside a corresponding dished support; each pair of parallel dished supports being interconnected by a hollow cross-beam and connected to the chassis through elastic means, a hydroelastic shock-absorbing suspension enclosed at each end of the cross-beam and bearing against the latter to control the rocking of the corresponding wheel carrier around the transverse axis through the agency of a lever rocking in unison with the wheel carrier around the same axis between predetermined limits.

3,736,003

AIR-SUSPENSION SYSTEM FOR MOTOR VEHICLES

Hiroyuki Ono, Kariya-shi, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi-ken, Japan

Filed Dec. 8, 1970, Ser. No. 96,167
Claims priority, application Japan, Dec. 9, 1969, 44/98333; Oct. 20, 1970, 45/92568
Int. Cl. B60g 17/04
U.S. Cl. 280—124 F 4 Claims



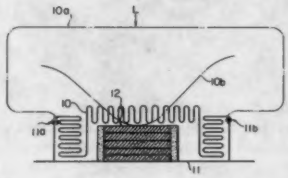
A motor-vehicle suspension system incorporates a closed air circuit comprising a low-pressure tank, a first changeover valve, a compressor, a second changeover valve, a high-pressure tank, and a pneumatic device (an air spring or the like into which compressed air is supplied from the high-pressure tank). A first pressure-sensitive device is provided for preventing the compressor from pumping any more air away from the low-pressure tank into the high-pressure tank upon reduction in the pressure of the former tank, while a second pressure-sensitive device is provided for restarting the once-stopped pumping operation in the event of the reduction in the pressure of the latter tank which may be caused by air leakage. Simultaneously with this restarting of the compressor operation, a device for air replenishment becomes operative to cause the first and second changeover valves to cut off the above two tanks from the compressor. Atmospheric air is then permitted to flow into this compressor and thence back into the low-pressure tank, from which the air is pumped into the high-pressure tank by the same compressor.

3,736,004

VEHICULAR SAFETY DEVICE

Takashi Haruna, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Apr. 29, 1971, Ser. No. 138,528
Claims priority, application Japan, May 14, 1970, 45/38098
Int. Cl. B60r 21/04, 21/08
U.S. Cl. 280—150 AB 3 Claims



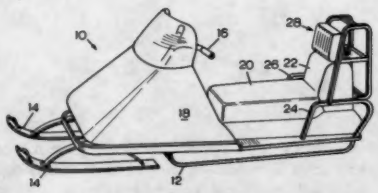
An improvement is made on a vehicular safety device using an inflatable confinement which is expanded to a protective condition when a collision is encountered by a motor vehicle. The improvement comprises a shock-absorptive structure which is located within the inflatable confinement and receives a vehicle occupant in the event the vehicle occupant is flung to the inflatable confinement before the confinement is fully expanded to the protective condition. The vehicle occupant is thus protected from being forced against structural parts of a cabin of the motor vehicle even when the confinement which is being expanded and caused to cave in by the force of inertia in the vehicle occupant subjected to the impact.

3,736,005

SNOW VEHICLE ATTACHMENT

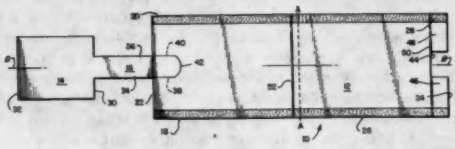
Orval George Wright, Toronto 12, Ontario, Canada, assignor to Wright Aluminum Limited, Weston, Ontario, Canada

Filed May 17, 1971, Ser. No. 144,202
Int. Cl. B62m 27/02
U.S. Cl. 280—150 C 1 Claim



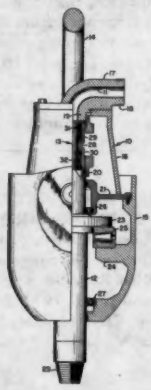
This invention provides a safety attachment for snow vehicles of the type having a body and a seat extending longitudinally rearwardly and terminating at a rear end. The attachment comprises first and second end frames extending upwardly in generally parallel relationship. Each of the end frames includes means at its lower end adapted to attachment the end frame to the side of the vehicle body adjacent the rear end and a plurality of rails extend generally horizontally between the end frames. A back rest is coupled to the end frames and positioned so that when the attachment is coupled to the vehicle the back is positioned relative to the seat such that a passenger sitting on the seat is supported by the back rest.

3,736,006
ENVELOPE
Nathan Polsky, 70 Mount Vernon Street, Boston, Mass.
Filed June 16, 1971, Ser. No. 153,780
Int. Cl. B42d 15/00; B65d 27/00
U.S. Cl. 283—6 8 Claims



An envelope, and a unitary blank for making the same, having a rectangular panel joined to another panel at one end by a connecting strip and having a slit at the other end is disclosed. The connecting strip is folded where it joins the rectangular panel and the rectangular panel is then folded transversely along a line slightly offset from the transverse axis. A pair of tabs formed by the slot are then folded over to seal the envelope. The connecting strip is extended into the rectangular panel by perforations which can be torn thereby allowing the user to pull the strip and second panel outwardly thereby exposing hidden writing through a window provided in the rectangular panel.

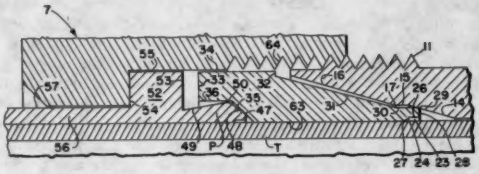
3,736,007
SWIVEL
Joe K. Heilhecker, Bellaire; William C. Maurer, and Everett H. Lock, both of Houston, all of Tex., assignors to Esso Production Research Company, Houston, Tex.
Filed Aug. 23, 1971, Ser. No. 173,897
Int. Cl. F16l 27/00
U.S. Cl. 285—31 7 Claims



A washpipe assembly for use in drilling swivels wherein the assembly includes a washpipe, a sleeve for mounting the washpipe to the swivel body, and packing for sealing the space between the sleeve and washpipe. The packing comprises a plastic ring and a metal anti-extrusion ring mounted in a recess formed in the plastic ring.

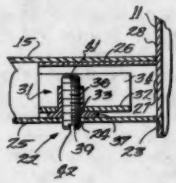
3,736,008
TUBE COUPLING
Cullen B. Crawford, 28151 Gelchrist, Euclid, Ohio
Filed Feb. 16, 1971, Ser. No. 115,171
Int. Cl. F16l 19/08
U.S. Cl. 285—342 6 Claims

A tube coupling including a front and rear collet which are driven into biting engagement with a tube wall, the front collet being adapted to scrape the tube material to cold flow the same into abutments against which a flat portion of such collet sealingly bears, and the rear collet being adapted to cut chips or curls from the tube material to form the seal between such rear collet and the tube. An axially forwardly extending projection on the rear collet is provided with at least one cutting



edge which penetrates the tube material in a true radial direction responsive to arcuate flexing of such projection caused by engagement along a portion of the front collet, such flexing and bite occurring with relatively reduced friction between the collets due to the configuration and flexure of the projection.

3,736,009
TUBE CONNECTING MEANS
Lawrence H. Juhnke, Niles, Ill., assignor to Display Engineers Inc., Skokie, Ill.
Filed May 10, 1971, Ser. No. 141,596
Int. Cl. F16b 7/04
U.S. Cl. 287—54 C 2 Claims

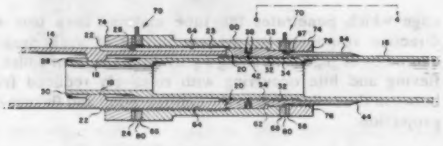


A display stand for use as shelving having vertical corner members joined by horizontal members adapted to support flat shelves or plates of any suitable material. The corner members and support members are tubular, and are telescopingly connected together by a channel or U-shaped stub or projection secured to one of said members and adapted to telescope into the open end of the other member, a clip frictionally held in the projection, an internally threaded bearing member supported in the clip and having a top bearing surface to frictionally engage the interior surface of the telescoping tubular member, and a threaded stud received in the bearing and acting to urge the bearing against the interior surface of the tubular member for detachably but rigidly joining said members.

3,736,010
PITCH LINK ASSEMBLY AND LOCKING DEVICE THEREWITH
Artemas M. Larkin, Glendale, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Dec. 3, 1970, Ser. No. 94,696
Int. Cl. F16b 7/10
U.S. Cl. 287—62 13 Claims

A connecting rod assembly particularly adaptable as a pitch link or push-pull rod device in a rotary wing aircraft, comprising a telescoping pair of rods splined to each other to prevent relative rotation but providing for relative axial displacement

and thus, adjusting its effective length, a calibrated sleeve mounted on the second of such rods, a union sleeve threaded to the first of such rods for clamping the calibrated sleeve to the first rod, and jam nut, lock ring-and-tang ring combinations mounted on the first rod and calibrated sleeve for tightening against the union sleeve after the length of the assembly has been precisely adjusted by rotation of the calibrated sleeve. Each end of the union sleeve includes notches at staggered intervals for cooperative engagement with projections on the lock ring which also includes serrations for engaging corresponding serrations on the tang ring. One lock ring is keyed to the first rod and one lock ring is keyed to the calibrated sleeve. By trail and error of rotation of lock ring to notches, a maximum fit of lock ring to tang ring is achieved while infinite adjustment in effective length for the assembly by rotation of the calibrated sleeve remains available.



An internal locking device for two elements, such as connecting rods, is also disclosed. A pair of spaced circumferential grooves is provided in a cylindrical element (calibrated sleeve) threadedly circumscribing a second rod, and an interior annular groove is also provided in such element, being disposed between the planes of the circumferential grooves. Upon tightening of the cylindrical element against a first rod by means external to the cylindrical element, such as by a threaded sleeve forming a union between external threads on the first rod and the cylindrical element, the threads on the cylindrical element compress against the threads of the second rod, thereby eliminating any tolerance spread or slop that otherwise would exist between such threaded connection and achieving an exact locked position for such rods. The positions of the circumferential grooves and the annular groove are reversible, with the same effect being achieved.

3,736,011

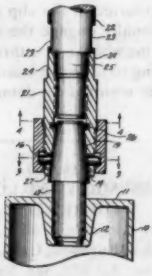
QUICK DISCONNECT TOOL COUPLING

James E. Ward, Glendora, Calif., assignor to Tool & Equipment Mfg. Co., Inc., Monrovia, Calif.

Filed Mar. 2, 1972, Ser. No. 231,163

Int. Cl. F16b 7/20

U.S. Cl. 287—103 A **5 Claims**



This torque transmitting quick disconnect coupling is particularly useful with concrete coring tools and the like. It includes a female member in the form of a sleeve having a self releasing tapered socket at one end and a pair of opposed radially extending slots in its sides, extending from the wider open end of the taper for part of its length. A collar is threaded onto the outside of the sleeve from the end having the taper. An inwardly directed flange at one end of the collar defines an internal annular groove. A pair of slots are cut through the flange. A combination of pins and a set screw limit rotation of the collar between one position with the slots in the sleeve and collar aligned with each other and a second position less than 180° from the first so that the slots are not aligned. The quick disconnect coupling also includes a male member having a self releasing tapered shank and a pair of opposed pins extending radially from a portion of the tapered shank a maximum distance less than the inside diameter of the annular groove. Thus, when the collar is rotated with the slots in alignment, the pins can pass therethrough permitting the shank to seat in the socket. The collar is then turned on its threads so that the flange cams against the pins to retain the shank in position.

3,736,012

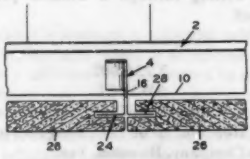
CONNECTION JOINT FOR A CONCEALED CEILING SUSPENSION SYSTEM

Joseph W. Boylan, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed June 7, 1971, Ser. No. 150,401

Int. Cl. F16b 7/04

U.S. Cl. 287—189.36 A **2 Claims**



The joint structure for connecting together the grid elements which form the suspension system for a concealed ceiling suspension system. A groove structure is provided in the cross members of the suspension system. This permits the cross members to be suspended from the main runners on the ceiling suspension system. Ceiling panels are then suspended from the cross members. The joint structure is specifically a generally inverted T-shaped groove in the vertical web of the cross member for receiving the generally inverted T-shaped structure of the main runner structure.

3,736,013

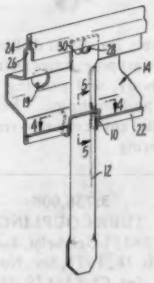
RETENTION CLIP FOR CONCRETE SLAB KEY JOINT FORMING STRIPS

Phillip S. Hunter, Castro Valley, Calif., assignor to Burke Concrete Accessories, Inc., Burlingame, Calif.

Continuation of Ser. No. 851,994, Aug. 21, 1969, abandoned. This application July 6, 1971, Ser. No. 160,175

Int. Cl. F16b 7/04, 2/20

U.S. Cl. 287—189.35 **2 Claims**



A wire-like spring clip and clip installing tool for clamping a retaining stake to a key joint forming strip for concrete slabs.

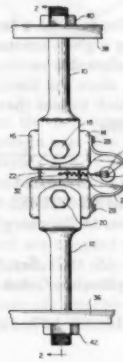
The clip has a back portion transversely disposed against the retaining stake, and two prong-like arm portions extending under the lower edge of the forming strip and projecting upwardly against the back of the forming strip. The pring-like arm portions are spring biased to direct a compressing force in cooperation with the straight back portion, thereby firmly clamping the retaining stake against the forming strip. The installing tool which operates as a lever to facilitate installation of the clip on the retaining stake and forming strip comprises a flat rigid shank with a notched end for temporarily holding the clip for installation.

3,736,014

PRESSURE ACTUATED RELEASE DEVICE

Kenneth T. Cornelius, Potomac, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 18, 1971, Ser. No. 200,101
Int. Cl. E05c *15/00*
U.S. Cl. 292—256.5 **6 Claims**



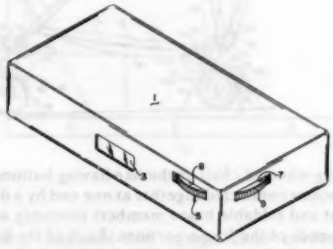
The invention is a device to hold shipboard hatches closed against the application of great mechanical force, yet release them when the ambient air pressure reaches a preselected value.

3,736,015

WINDING MECHANISM FOR A CAMERA

James J. Dierks, and Jeffrey R. Stoneham, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,123
Int. Cl. G03b *17/26*
U.S. Cl. 242—71.2 **7 Claims**



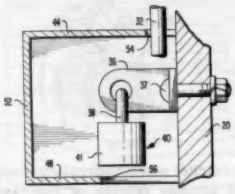
A mechanism for rotating a film cartridge wind-up core which has a gear attached thereto includes a manually rotatable ring gear having internal teeth engageable with the cartridge gear for effecting the rotation of the cartridge gear. The ring gear can be directly engaged with the cartridge gear, or coupled thereto via a gear train.

3,736,016

LOCK GUARD FOR TRAILER DOORS

C. Godfrey Garvey, 2918 Center Drive, Ellicott City, Md., and Harry Paul McCoy, R.R. No. 1, Box 340 A, Owings Mills, Md.

Filed Dec. 6, 1971, Ser. No. 205,206
Int. Cl. E05b *65/16, 67/38*
U.S. Cl. 292—281 **8 Claims**



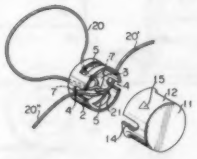
The lock guard includes an enclosure secured to one of pivoted double doors on a trailer. The enclosure projects beyond the edge of the one door and encloses a pair of hasps when the doors lie in a closed position. An access opening is provided through the bottom wall of the enclosure to facilitate locking and unlocking a padlock joining the hasps. A second opening is provided through the upper wall of the enclosure in registry with the bottom access opening. The standard locking cam rod for trailer doors extends through these openings.

3,736,017

SEALING DEVICE

Toshio Kaiho, Tokyo, Japan, assignor to Takara Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 16, 1971, Ser. No. 115,601
Claims priority, application Japan, June 26, 1970, 45/55172
Int. Cl. B65d *55/06*
U.S. Cl. 292—317 **4 Claims**



A sealing device comprises a shackle, a pair of inner and outer cup-like members each having an end wall at one end, and means for locking said cup-like members together in such a manner as preventing their separation after said cup-like members are once nested one in another. The shackle may be or may not be preliminarily connected at its ends to the end walls of the inner and outer members.

3,736,018

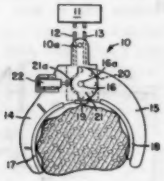
HYDRAULIC CLAW WITH LOCKING MECHANISM

Jack L. Sayre, Jr., Glendora, and Kenneth R. Fishel, Del Mar, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 10, 1971, Ser. No. 179,348
Int. Cl. B66c *3/16*
U.S. Cl. 294—88 **4 Claims**

A claw for grasping and recovering an object is articulated by a hydraulically responsive actuator which additionally has the capability for exerting a substantial gripping force on the object. After the object has been gripped, allowing its recovery, a pawl and ratchet carried on the claw mutually en-

gage to lock the claw in its gripped position. The hydraulic actuator and the pawl-ratchet combination are hydraulically coupled to retain the claw in its locked gripped position in the event of hydraulic failure. With availability of hydraulic pressure, suitable hydraulic connections allow disengagement of



the pawl from the ratchet when hydraulic pressure is fed to the claw actuator for causing release of the claw. In an electrohydraulic system, a solenoid actuated pawl and ratchet mechanism, with appropriate connections also provide for locking the claw in its locked position and for its subsequent release.

3,736,019

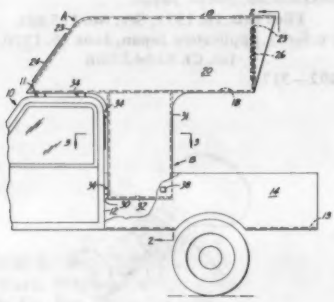
CAMPER

James E. Kinberger, P.O. Box 372, Stinson Beach, Calif.

Filed Oct. 19, 1970, Ser. No. 81,704

Int. Cl. B60p 3/32

U.S. Cl. 296—23 MC **7 Claims**



A camper body for use with a truck having a driver's cab and a truck bed rearwardly of said cab. The camper body is designed to provide a relatively large sleeping space and a storage space and at the same time leave the major portion of the truck and truck bed free for use in its ordinary function of hauling articles.

3,736,020

ENERGY ABSORBING SEAT FOR SNOWMOBILES

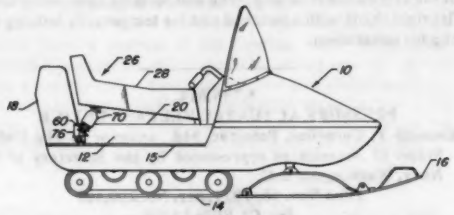
Martin Thomas Pilachowski; Larry F. Stikeleather, and Donald J. Zach, all of Milwaukee, Wis., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 26, 1971, Ser. No. 166,142

Int. Cl. A47c 7/14

U.S. Cl. 296—63 **15 Claims**

Snowmobile seat has relatively firm, damped cushion mounted on a base member which is pivoted at its front end to the snowmobile chassis. The rear end of the base member is supported above the chassis by a pair of rearwardly and downwardly extending shock absorbers which are attached at their lower ends to a rigid saddle strap bracket which spreads the load over a large area of the chassis. The shock absorbers are surrounded by springs which are preloaded so as not to be compressed by the static weight of an average operator. The shock absorber means cooperate with the springs and damped cushion to greatly reduce shock loads transmitted to the operator as a result of hard bounces of the vehicle. By preloading and positioning the linear springs so as to face rear-



wardly at an angle to the vertical, a far greater amount of energy can be absorbed by a given amount of vertical seat deflection and a maximum allowable vertical spring force than if the springs were vertical, since the linear springs are loaded in a non-linear manner which causes them to function somewhat as a constant force spring.

3,736,021

FOLDING WHEEL CHAIR

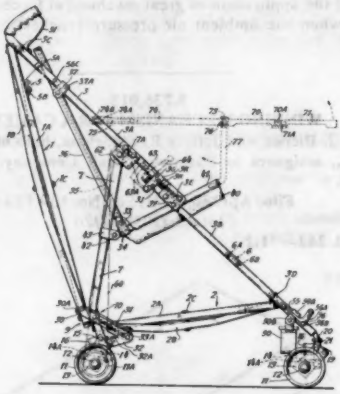
Owen Finlay MacLaren, 14 Daventry Road, Barby, Near Rugby, England

Filed Apr. 16, 1971, Ser. No. 134,589

Claims priority, application Great Britain, Apr. 17, 1970, 18,489/70

Int. Cl. A47c 4/00

U.S. Cl. 297—42 **9 Claims**



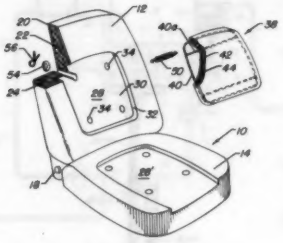
A folding wheeled chair or the like having bottom and back frame portions connected together at one end by a double-axis pivot joint and foldable brace members pivotably attached at the other ends of the frame portions. Each of the bottom and back frame portions are formed by interpivoted cross members and means are provided to lock the frames in an extended condition. Wheels are provided at the four corners of the bottom frame portion. The chair may be collapsed by pivoting the frame portions with respect to themselves and to each other while folding the brace members until a cane-like configuration is obtained.

3,736,022

MOLDED SEAT CUSHION WITH CAST SKIN AND INSERT RECEIVING RECESS

Arthur O. Radke, Milwaukee, Wis., assignor to Oil Products Company, Des Plaines, Ill.

Filed July 26, 1971, Ser. No. 166,182
Int. Cl. A47c 27/08, 7/02
U.S. Cl. 297—453 15 Claims



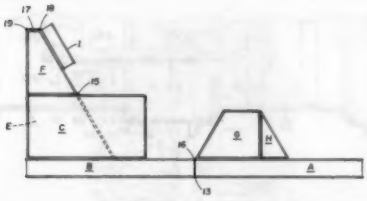
In order to overcome the non-breathing properties of a molded seat cushion having a cast skin and to permit a single molded seat cushion member to be capable of taking on various aesthetic appearances as well as to provide functions such as ventilation, heating, cooling and manufacturer or owner identification, the seating area of the cushion is provided with large recessed areas which are adapted to receive insert members. The insert members, which may be formed of porous materials, are fastened to the seat parts in a manner such that they appear to be permanently attached to the seat parts but can be readily replaced when desired.

3,736,023

PORTABLE FOOTSTOOL AND LOUNGE CHAIR COMBINATION

William L. Lyons, 618 Melrose Drive, Cedar Falls, Iowa

Filed Feb. 2, 1972, Ser. No. 222,804
Int. Cl. A47c 13/00
U.S. Cl. 297—118 6 Claims



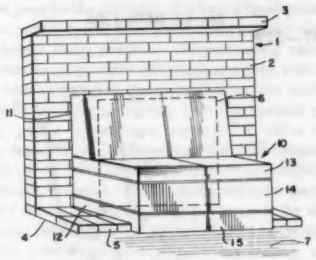
A portable footstool and lounge chair combination is formed from a plurality of cushions of non-rigid material. Certain of the cushions are hinged to each other so that when folded up, in which state its overall shape is that of a compact, rectangular prism, it provides a footstool or hassock. When unfolded the combination of cushions provides an extensive lounge having a seat, a pair of arm rests, a back rest, a head rest, and an elevated leg rest.

3,736,024

COMBINATION FIREPLACE COVER AND ARTICLE OF FURNITURE

William J. Woolard, 3748 Silina Drive, Virginia Beach, Va.

Filed Sept. 3, 1971, Ser. No. 177,709
Int. Cl. A47c 15/00
U.S. Cl. 297—217 7 Claims



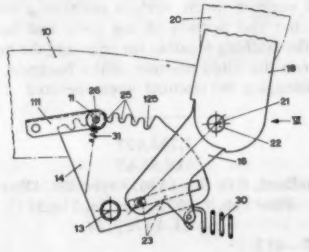
An article of furniture for temporary use in hiding the opening of a fireplace when the fireplace is not in use, the furniture having a vertically disposed back of a size to cover the fireplace opening and a horizontal support surface extending forwardly from the back to overlie the fireplace hearth.

3,736,025

DEVICE FOR POSITIONING A SEATING ARRANGEMENT ESPECIALLY IN MOTOR VEHICLES WITH FINE ADJUSTMENTS

Horst Ziegler, and Albert Thill, both of 318 Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed June 14, 1971, Ser. No. 152,749
Claims priority, application Germany, June 25, 1970, P 20 31 383.1
Int. Cl. B60n 1/06
U.S. Cl. 297—369 6 Claims



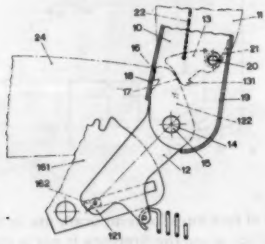
In a motor vehicle, a set arrangement having a seat portion and a backrest pivotably mounted on a common axle with the seat portion and tiltable between a first region of inclination corresponding to a sitting position and a second region of inclination corresponding to a rest position, a positioning device comprising an operating handle disposed at one side of the seat arrangement, first latching device coupled to the operating handle and affecting fine adjustments in the sitting position of the backrest, a second operating handle disposed on the other side of the seat arrangement, a second latching device coupled to the second operating handle and limiting the maximum region of fine adjustments within the sitting position by the first operating handle, the first operating handle affecting the fine adjustments independently of the second operating handle, but the first and second operating handles are actuated simultaneously for transferring the backrest into the rest position.

3,736,026

DEVICE FOR POSITIONING A SEATING ARRANGEMENT ESPECIALLY IN MOTOR VEHICLES

Horst Ziegler, and Albert Thill, both of Wolfsburg, Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed June 14, 1971, Ser. No. 152,750
Claims priority, application Germany, June 25, 1970, P 20 31 382.0
Int. Cl. B60n 1/06
U.S. Cl. 297—379 4 Claims



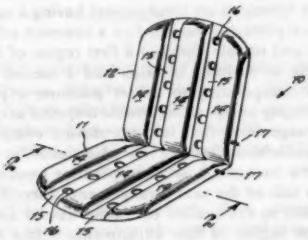
In a vehicle, especially in a motor vehicle, a seat arrangement having a seat portion and a backrest portion, the latter being tiltable between an upright sitting and a forwardly tilted "getting-in" position, the backrest has a hollow frame lower portion pivotally mounted, a lever having one end secured to the pivot point and protruding into the hollow portion, it has formed at two opposite sides thereof abutting surfaces cooperating with abutting surfaces formed on the hollow portion, a latching member pivotally mounted adjacent the protruding end portion of the lever, a spring forcing an abutting surface of the lever into engagement with one of the abutting surfaces on the end portion lying adjacent thereto and thereby forcing the other of the abutting surfaces of the lever end portion into engagement with the abutting surface on the hollow portion adjacent thereto thereby latching the backrest in an upright position, an operating handle secured to the latching member for releasing the latching member from the latched position in the upright position, a hook portion formed on the end portion of the lever and hook portion formed on the latching member for engaging the hook portion of the lever in the tilted position of the backrest, the handle serving to disengage the latching when operated.

3,736,027

AIR SEAT

Alfred P. Stafford, P.O. Box 1546, Vegreville, Alberta, Canada

Filed Feb. 7, 1972, Ser. No. 216,351
Int. Cl. A47c 7/14
U.S. Cl. 297—453 1 Claim



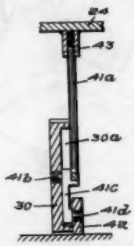
A special cushion designed for sitting upon and leaning against, the device comprising seat portion and a back rest portion which are attached pivotally together along one edges thereof, the back rest and the seat each having a series of parallel inflated tubes which are inflatable with air, and a web between the inflated tubes, the webs each having a series of ventilation openings there through.

3,736,028

ICE AND SNOW REMOVAL MACHINE

Richard P. Davis, Sanbornton, N.H.

Filed Feb. 16, 1971, Ser. No. 115,404
Int. Cl. E01h 5/12
U.S. Cl. 299—25 8 Claims



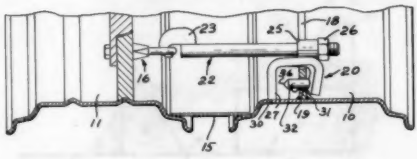
A machine for breaking up and removing compacted snow and ice utilizing a number of narrow disks placed side by side. The disks are mounted in pairs, each pair consisting of a breaker disk and a sweeper or pick up disk, individually spring-pressed downward. The breaker disks are designed to crush the snow or ice remaining on a road after plowing, and force the crushed snow or ice sideward, where it is picked up by the sweeper disks. A shoe immediately behind the disk assembly guides the snow onto a conveyor belt which ejects the snow toward the side of the road. The machine is mounted on, or towed by, a truck or other vehicle.

3,736,029

ATTACHABLE DUAL DRIVE WHEEL

William J. Dietrich, Sr., Goodfield, Ill., assignor to Dietrich Manufacturing, Inc., Goodfield, Ill.

Filed Apr. 13, 1971, Ser. No. 133,674
Int. Cl. B60b 1/06
U.S. Cl. 301—39 R 6 Claims



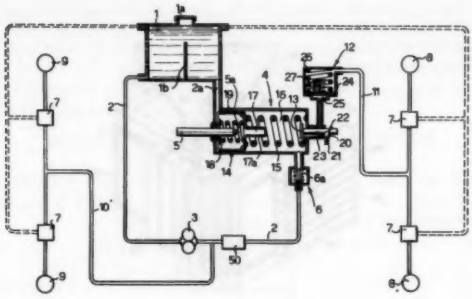
A dual wheel is secured to a drive wheel of a traction vehicle by means of a plurality of bolt fasteners. The bolt fasteners are secured to the rim of the dual wheel by means of removable anchor lugs. The anchor lugs are attachable at predetermined locations about the dual wheel rim and these locations have a different angular spacing than the pivotal attachment of the bolt fasteners to the drive wheel rim so that some of the bolt fasteners are forwardly inclined and some are rearwardly inclined relative to a line parallel to the drive axis. Thus, some of the bolt fasteners will always be in tension when the drive is reversed, and slip between the two wheels is minimized.

3,736,030

MOTOR VEHICLE HYDRAULIC BRAKING SYSTEMS

Marco Peruglia, Turin, and Giancarlo Michellone, Cambiano, both of Italy, assignors to Fiat Societe per Axioni, Turin, Italy

Filed June 2, 1972, Ser. No. 259,312
Int. Cl. B60t 13/18
U.S. Cl. 303—6 C 11 Claims



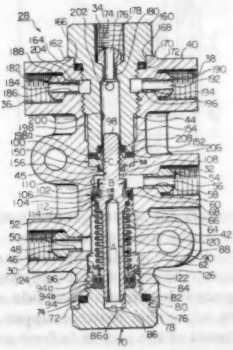
An hydraulic braking system for motor vehicles comprising a loop circuit around which the hydraulic fluid is pumped when the engine is in operation, to maintain a normal operating pressure in the loop and two branches containing front and rear braking actuators. The brake pedal is linked to a valve in the circuit such that depression of the brake pedal causes a restriction in the loop circuit so as to increase the hydraulic pressure in the system to operate the brakes. The system thus has a normal operating pressure due to circulation of fluid in the loop part of the circuit, and a number of pressure sensitive devices are positioned in various parts of the circuit to detect a fall in the pressure in the part of the circuit with which each is associated and to isolate that part of the circuit from the remainder of the circuit when such a fall in pressure is detected. Thus, in the event of a failure of any part of the circuit at least some of the brakes will still be operable.

3,736,031

HYDRAULIC BRAKE FLUID PRESSURE PROPORTIONING VALVE

Kelichiro Yabuta, Asahi-ku, Yokohama, and Kaname Doi, Itame, both of Japan, assignors to Nissan Motor Company Limited, Yokohama and Sumitomo Electric Industries, Limited, Osaka, both of Japan

Filed July 6, 1972, Ser. No. 269,455
Claims priority, application Japan, Aug. 30, 1971, 46/66404
Int. Cl. B60t 8/26
U.S. Cl. 303—6 C 9 Claims



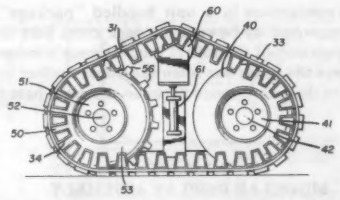
A hydraulic brake fluid pressure proportioning valve adapted to be interposed in a dual brake system between a tandem master cylinder and rear brake cylinders for modulating the fluid pressure to be transmitted to the rear brake cylinders. The brake fluid pressure proportioning valve includes a housing having first and second inlet ports communicating with front and rear brake fluid pressure sections of the tandem master cylinder, respectively, an outlet port communicating with the rear brake cylinders and a first chamber for providing fluid communicator between the second inlet port and the outlet port to pass an unmodulated fluid pressure from the second inlet port to the outlet port when a fluid pressure in the second inlet port is lower than a predetermined point of transition. The brake fluid pressure proportioning valve also includes a pressure responsive differential piston which is axially slidably accommodated in the second chamber and which has an upper stem portion extending into the second chamber, a valve head and a lower stem portion. A valve member is operatively disposed in the first chamber and cooperative with the valve head of the differential piston to control the fluid communication between the second inlet port and the outlet port thereby to modulate the fluid pressure to be delivered to the outlet port when the fluid pressure at the second inlet port reaches the predetermined point. A sealing member is disposed in the second chamber for sealing the second chamber from the first chamber so that a failure in the front brake pressure will modify the functioning of the differential piston.

3,736,032

PNEUMATIC DRIVE SPROCKET FOR TRACKED VEHICLES

Crockett Mosshart, Detroit; Earl F. Burton, Dearborn Heights, and Walter C. Macklem, Detroit, all of Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jan. 28, 1970, Ser. No. 6,531
Int. Cl. B62d 55/12
U.S. Cl. 305—34 2 Claims



A pneumatic drive sprocket for tracked vehicles which includes a belted radial tire casing having radially projecting lugs or teeth disposed in spaced-apart relationship about the circumference of the tire and which are adapted to engage the track for driving purposes. The utilization of such a drive sprocket enables the vehicle to obtain the shock absorbing and flotation characteristics of pneumatic tires while permitting accurate, consistent and positive driving engagement with the track due to the fact that the pitch length between the teeth is not appreciably changed upon contact with the ground because of the essentially circumferentially inextensible nature of the radial belted tire.

3,736,033

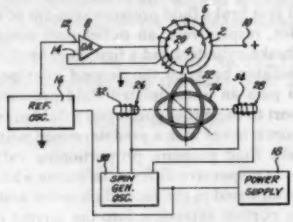
GYROSCOPIC REFERENCE SYSTEM

Jorge G. Codina, 223 Secor Road, Hartsdale, N.Y.

Filed Mar. 16, 1972, Ser. No. 235,370
Int. Cl. F16c 39/06
U.S. Cl. 308—10 4 Claims

A single core has an energizing winding and establishes a

levitational magnetic field therebelow. A skeletal sphere is suspended in the field and opposed electromagnets cause the



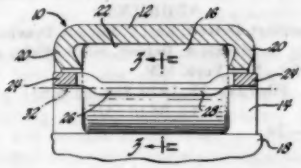
suspended sphere to rotate as the rotor of an induction motor to thus provide a gyroscopically stable inertial reference.

3,736,034

MEANS TO IMPROVE RETENTION OF ROLLERS IN CAGE

Edward W. Molloy, Port Clinton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 19, 1971, Ser. No. 173,084
Int. Cl. F16c *33/64*
U.S. Cl. 308—213 **5 Claims**



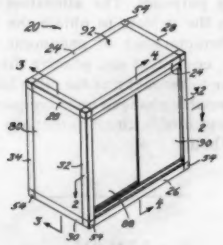
The roller retention in a unit handled "package" roller bearing is improved by bowing the cage cross bars inwardly after snap insertion of the rollers into the cage windows. The bowing moves the cross bar retention edges further inwardly and increases the interference between the cross bars and the rollers.

3,736,035

MODULAR DISPLAY ASSEMBLY

Milton T. Brown, Narberth, and Zdenek Bilek, Whitemarsh Village, both of Pa., assignors to DCA Educational Products, Inc., Philadelphia, Pa.

Filed June 1, 1971, Ser. No. 148,556
Int. Cl. A47b *77/00*
U.S. Cl. 312—107 **7 Claims**



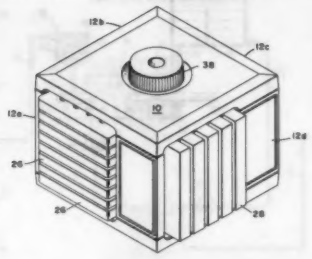
A modular display assembly comprised of a plurality of modular elements which may be joined to define as assembly of desired configuration. The modular elements have means for receiving and supporting side panels, shelves or sliding doors.

3,736,036

STORAGE SYSTEM FOR TAPE CASSETTES

Gregory Mathus, Cambridge, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Filed Jan. 19, 1972, Ser. No. 219,086
Int. Cl. A47b *81/00, 81/06, 53/00*
U.S. Cl. 312—285 **4 Claims**



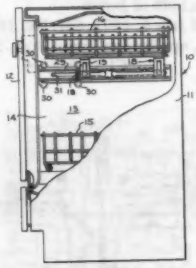
A storage cabinet for cassettes, either boxed or unboxed, comprising a turret with four side members, each of which has a compartment to receive boxed and unboxed cassettes. Each compartment is defined by two opposite pairs of supports, each of which carries dividers that describe pockets in the compartment to support either boxed or unboxed cassettes within the same volume.

3,736,037

RACK LEVEL ADJUSTMENT APPARATUS IN AN APPLIANCE CABINET

Donald G. H. Doepke, Greenfield, Wis., assignor to General Electric Company, Louisville, Ky.

Filed June 1, 1971, Ser. No. 148,839
Int. Cl. A47b *51/00*
U.S. Cl. 312—351 **4 Claims**



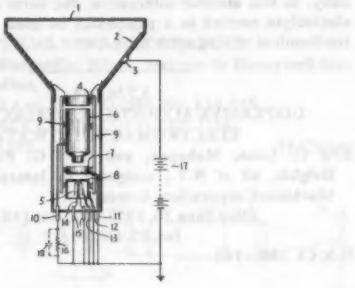
The support means for a rack, such as a dish-supporting rack in a front-opening dishwasher cabinet, includes means for manually adjusting the level of the rack in accordance with the size of the itmes to be placed on the adjustable rack or on a rack vertically spaced therefrom. Each side of the adjustable rack is preferably adjustable between upper and lower positions, and adjustment of the rack side from an upper position to a lower one is a particularly rapid operation accomplished by manually releasing a locking means whereby the rack side will drop to its lowermost position.

3,736,038

SPOT-KNOCKING METHOD FOR ELECTRONIC TUBES

Hisao Nakanishi, and Wataru Imanishi, both of Kyoto, Japan, assignors to Mitsubishi Kenki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1971, Ser. No. 128,294
Int. Cl. H01j 9/00
U.S. Cl. 316—26 10 Claims



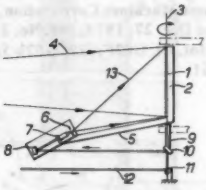
For spot-knocking a cathode ray tube including a first electrode adapted to be externally applied with a high operating voltage, a high voltage in excess of the operating voltage is supplied across the electrode and ground to cause an electric discharge within the tube while a second electrode disposed adjacent the first electrode between it and a cathode is connected to ground through a resistor. This leads to a flow of current through the resistor to cause another electric discharge across the second electrode and a third electrode adjacent it and grounded.

3,736,039

SYNTHETIC 3-D HOLOGRAM WITH REDUCED DISPERSION UPON RECONSTRUCTION

Donald John Hay, Basingstoke, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed May 17, 1971, Ser. No. 143,944
Claims priority, application Great Britain, May 21, 1970, 24,773/70
Int. Cl. G02b 27/22
U.S. Cl. 350—3.5 7 Claims



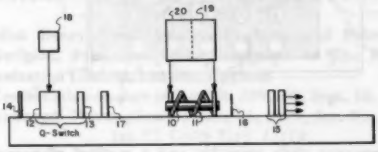
The system of producing 3-D holographic reconstructions from a plurality of photographs of a scene taken from different angles (as described in British Pat. specification No. 1,218,556 and U.S. Pat. No. 3,598,484) is modified by using an oblique reference beam of specified direction when making the successive holograms therefrom on a common photo-sensitive sheet. The reference beam is directed in a plane which is normal to the sheet and which includes its axis of rotation. This direction allows the system to be mechanical simpler and also reduces the optical dispersion when viewing.

3,736,040

COHERENCE EXTENDER FOR Q-SWITCHED LASERS FOR USE IN HALOGRAPHY

Samuel M. Zivi, Sherman Oaks, and Gordon H. Humberstone, Encino, both of Calif., assignors to TRW Data Systems, Inc., Torrance, Calif.

Filed Dec. 28, 1970, Ser. No. 101,898
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 4 Claims



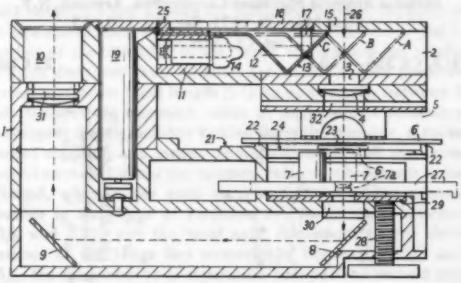
The coherence of Q-switched, solid state lasers, such as ruby lasers, is improved by employing an intracavity optical element, such as an etalon, positioned between the Q-switch and the active laser medium. This permits the laser to be operated reliably at low pumping power levels and enables holograms and interferograms to be obtained consistently.

3,736,041

MICROSCOPE WITH SELECTIVELY OPERABLE ILLUMINATING AND VIEWING MEANS

John Norrie McArthur, Skatchbow Cottage, Landbeach, England

Filed Apr. 19, 1971, Ser. No. 135,056
Int. Cl. G02b 21/08
U.S. Cl. 350—87 7 Claims



A microscope comprises a body including an opening and containing a condenser and an objective and an eyepiece constituting an optical system for viewing of a subject positioned between the condenser and the objective.

The body has an aperture on the optical axis of the condenser on the side of the condenser which is remote from the objective.

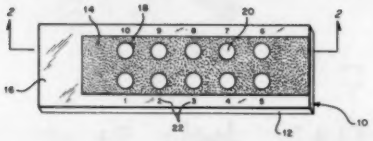
Reflector means, including two angled reflector elements, are disposed in said body and are movable linearly transversely of the optical axis of the reflector at the side of the condenser remote from the objective. A light source is positioned in the body.

The reflector means has a first position in which it intercepts the optical axis of the condenser so as to direct onto the condenser light rays from the light source, and a second position in which it directs thereonto light rays originating externally of the body, and a third position in which it does not intercept the optical axis of the condenser, thereby to permit viewing, through the aperture, of a subject magnified by the condenser.

3,736,042
MICROSCOPE SLIDE ASSEMBLY

Arthur L. Markovits, Millburn, and Stanley W. Wolfson, West Orange, both of N.J., assignors to Clinical Sciences, Inc., Gladstone, N.J.

Filed May 5, 1971, Ser. No. 140,497
Int. Cl. G02b *21/34*
U.S. Cl. 350—95 **30 Claims**

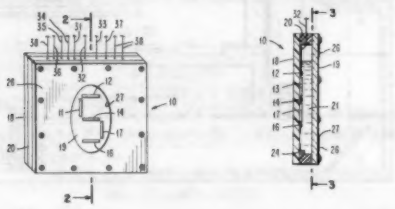


A microscope slide assembly and a method of preparing such which includes an optically clear glass slide having a controlled thickness fluorocarbon layer coated on one planar surface. The layer is provided with a multiplicity of openings to form wells on the glass slide. An agar solution may be incorporated within the wells to provide an adhesive layer. In addition, a particular antigen may be layered on top of the agar composition to provide a completed assembly wherein only a patient's serum is needed to process a microscopic examination. For use in fluoroescent microscopy, a film body grade Teflon containing an adhesive is used to provide the uniform fluorocarbon layer. The microscopic assembly may be enclosed within an environment isolation container to prevent contamination of the assembly from the ambient surroundings when the antigen is combined with the agar solution.

3,736,043
ELECTROCHEMICAL MOLECULAR DISPLAY AND WRITING

Carlos J. Sambucetti, Mohegan Lake, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 29, 1971, Ser. No. 128,833
Int. Cl. G02f *1/28*
U.S. Cl. 350—160 R **22 Claims**

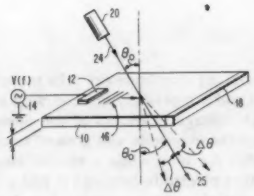


An electrochemical, electrically-controlled, reversible, segmented, display method and apparatus presents character patterns which can be erased. The apparatus includes a substrate carrying highly reflective display electrode strips which can be electrically addressed selectively to present characters. Characters are displayed by producing a cloud of iodine molecules obscuring certain electrode segments or strips composed of a noble metal or the like normally visible through a transparent cover in the absence of an iodine cloud. An electrolyte capable of undergoing an electrochemical reduction-oxidation reaction yields a molecular, highly non-reflective film on the display electrode strips to selectively obscure the selected display strips from view to present different characters to the viewer. Satisfactory electrolytes include organic polar iodide compounds including ammonium, arsonium, and phosphonium iodides. Preferably, the electrolyte includes pentavalent nitrogen iodides with a radical selected from the choline group such as acetylcholine, propionylcholine and butyrylcholine iodides. The iodine molecules provided in the film tend to remain near the electrode for a substantial period of time to provide "short-term" memory. If gelatine or other water soluble substances are added to the electrolyte, which substances are inert, transparent, and which retard migration of ions, then the duration of the memory provided by the system is extended according to the concentration of such substances. Alternatively, iodine lines can be used to form characters where the gold background is present everywhere and dark lines are written upon the display electrodes which normally are not distinguishable from the background optically. In still another alternative, the form of this invention electrolyte carried in a paper can be used to provide electrochemical writing upon the paper.

3,736,044
DISPERSIVE ACOUSTICAL DEFLECTOR FOR ELECTROMAGNETIC WAVES

Eric G. Lean, Mahopac, and Carl G. Powell, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,231
Int. Cl. G02f *1/32*
U.S. Cl. 350—161 **23 Claims**

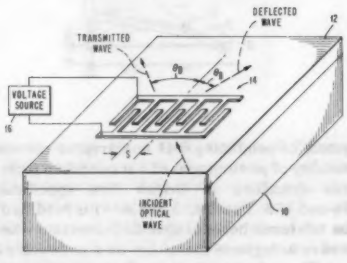


An acoustical deflector for electromagnetic waves using a dispersive medium for propagation of the acoustic waves. That is, the thickness of the medium is approximately the wavelength λ of the acoustic wave so that the phase velocity of the acoustic wave is a function of the acoustic wave frequency. Electromagnetic waves which interact with the acoustic wave fronts are deflected through different angles as the phase velocity of the acoustic wave changes due to frequency changes of this wave. Means are provided to excite an adjustable frequency acoustic wave in the dispersive medium.

3,736,045
FAST OPTICAL GUIDED WAVE MODULATOR AND DIGITAL DEFLECTOR

Paul F. Heidrich, Mahopac; Lawrence Kuhn, Ossining, and Keith S. Pennington, Somers, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,523
Int. Cl. G02f *1/32*; G02b *5/14*
U.S. Cl. 350—161 **6 Claims**



An optical guided wave modulator and digital deflector is described having a piezoelectric substrate with an amorphous

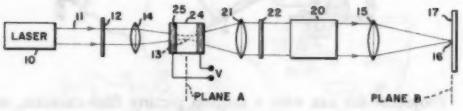
film waveguide thereon. An interdigital periodic electrode structure is connected to the amorphous film and to a source of d.c. voltage. The voltage produces fringing fields which generate a periodic strain in the piezoelectric substrate. The compressional strain in the piezoelectric substrate extends into the amorphous film to produce a periodic variation of index of refraction which functions as a grating at the Bragg angle which deflects an optical wave traveling in the amorphous film.

3,736,046

OPTICAL SPOT SIZE CHANGER

James D. Zook, Burnsville, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 15, 1971, Ser. No. 134,245
Int. Cl. G01d 15/12; G02f 1/26
U.S. Cl. 346—74 MT **15 Claims**



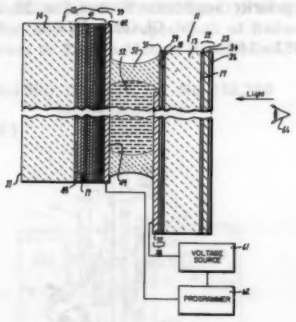
In a beam-addressed optical memory, the size of the focused light spot is electrically controlled to provide successively larger spot sizes for reading, writing and erasing. A body of material having electric field controllable optical properties which are capable of altering the intensity distribution or the wave front shape of the light beam is positioned between the light source and the focusing means. Electrodes controllably apply a non-uniform electric field to the body such that a non-uniform change in the intensity distribution or the wave front shape of the light beam occurs, thereby causing a change in the size of the focused light spot.

3,736,047

LIQUID CRYSTAL DISPLAY DEVICE WITH INTERNAL ANTI-REFLECTION CASTING

Robert M. Gelber, Healdsburg, and Edward A. Small, Jr., Santa Rosa, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Aug. 13, 1971, Ser. No. 171,572
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC **13 Claims**



Liquid crystal display device having first and second substantially transparent insulative plates having front and rear surfaces with said plates being arranged so that the rear surface of the first plate and the front surface of the second plate face each other. An antireflection coating is disposed on at least one of said front and rear surfaces of said front plate. A conducting coating is carried on said rear surface of said first plate and said front surface of said second plate. Means secures the first plate to the second plate so that there is a space provided between said conducting layers. A layer of liquid crystal material is disposed in said space.

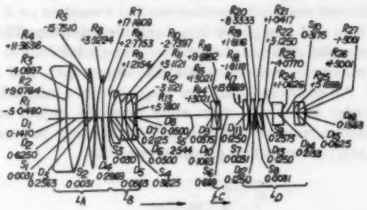
In the method, an antireflection coating is provided on a surface so that the pattern carried by the display device is invisible when the display device is not activated.

3,736,048

OPTICAL OBJECTIVES OF VARIABLE EQUIVALENT FOCAL LENGTH

Gordon Henry Cook, Oadby, England, and Peter Arnold Merigold, Prestatyn, Wales, assignors to The Rank Organization Limited, London, England

Continuation-in-part of Ser. No. 309,208, Sept. 16, 1963, abandoned. This application June 11, 1971, Ser. No. 152,254
Int. Cl. G02b 7/10, 15/18
U.S. Cl. 350—186 **22 Claims**



A zoom lens having an improved zooming range and comprising a convergent first member which for a given object distance remains stationary during the zooming relative movements, an axially movable divergent second member behind the first member having equivalent focal length f_B lying numerically between 4 and 8 times the minimum value of the ratio of the equivalent focal length of the complete objective to the f-number of the objective in the range of variation, an axially movable divergent third member behind the second member having equivalent focal length f_C lying numerically between 5 and 10 times the minimum value of such ratio, a stationary convergent fourth member behind the third member, a zoom control element, and means whereby operation of the zoom control element causes the zooming relative movements to be effected, wherein the total axial movement of the second member in the range of variation lies numerically between $1.5f_B$ and $2.5f_B$ and the total axial movement of the third member in the range lies numerically between $0.25f_C$ and $0.5f_C$, the minimum axial separation between the second and third members occurring when the equivalent focal length of the object is greater than half its maximum value in the range of variation, the movable divergent second member consisting of a divergent simple meniscus component with its surfaces convex to the front and a divergent compound component behind such simple component, and the movable divergent third member consisting of a doublet component having its front surface concave to the front with radius of curvature lying numerically between $0.5f_C$ and $1.0f_C$.

3,736,049

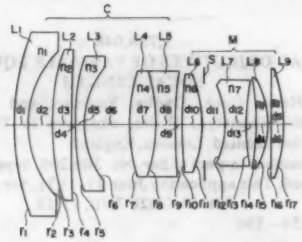
WIDE ANGLE PHOTOGRAPHING LENS

Yoshiyuki Shimizu, Kawasaki-shi, Kanagawa-ken, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Sept. 29, 1971, Ser. No. 184,883
Claims priority, application Japan, Sept. 30, 1970, 45/85417
Int. Cl. G02b 9/64
U.S. Cl. 350—214 **1 Claim**

A wide angle photographing lens which has a brightness of F2, an angle of field greater than 74° and a long back focus of

1.2 times as great as the focal length, and which comprises a combination of a forward lens group which is an afocal reversed Galilean conversion, and a rearward lens group which is a master lens. The forward lens group comprises a negative meniscus lens convex to the object side, a positive lens, a negative meniscus lens convex to the object side, a



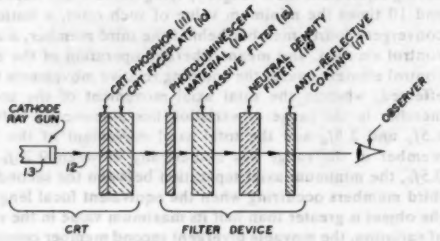
positive lens and a negative lens cemented thereto. The rearward lens group comprises a biconvex lens, a biconcave lens, a positive meniscus lens concave to the object side, and a positive lens. All of these lenses are sequentially arranged in the named order in the direction away from the object so as to satisfy predetermined conditions. The spacing between the forward and rearward lens groups is variable.

3,736,050

HIGH CONTRAST FILTER FOR VISUAL DISPLAYS DOWN-CONVERTING OTHERWISE BLOCKED RADIATION

Donald R. Bolum, East Islip, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed July 27, 1970, Ser. No. 58,568
Int. Cl. G02b *5/22*
U.S. Cl. 350—316 **4 Claims**



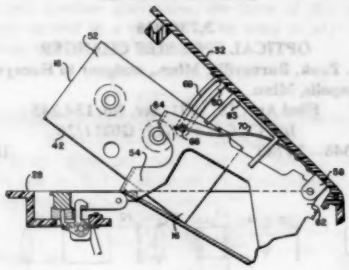
A radiation filter device is provided for utilization with visual display apparatus, such as the diffusely-emitting cathode ray tube, for contrast enhancement through substantial elimination of ambient radiation effects. This objective is attained through construction of a unique filter device comprising at least two filter elements. The filter device comprises, in cascaded, superposed relationship, a first filter element consisting of a layer or film of luminescent material having a sharp cut-off, band-pass radiation transmission characteristic disposed immediately adjacent the diffusely-emitting surface of the cathode-ray tube faceplate, a second filter element that is effectively a band-pass filter having a transmission band covering the selected band, and a neutral density filter element providing uniform attenuation to radiation of all useful wavelengths within the source emission spectrum. An anti-reflective coating may also be applied to the exit face of the filter device which is the neutral density filter.

3,736,051

PHOTOGRAPHIC APPARATUS FOR MOTION PICTURE PROJECTION

James M. Conner, Mamaroneck, N.Y., and Henry J. Salvador, Hasbrouck Heights, N.J., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 24, 1971, Ser. No. 174,374
Int. Cl. G03b *23/02*
U.S. Cl. 352—72 **16 Claims**



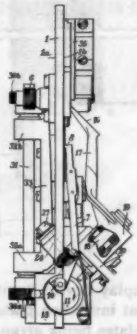
Projector for use with a motion picture film cassette, employing a housing having a front viewing face and a cassette-receiving cavity in communication with the top surface of the housing. A door member mounted at the rear of the opening and configured to block the opening when pivoted into closing position thereacross, carries a cassette-receiving guide which is adapted to receive the cassette from the front of the projector when the door is in its open position and to carry it to an operative location in the cavity when the door is pivoted to its closed position. The door is adapted to displace a drive mechanism of the apparatus into operative relation with the cassette, and the guide is coupled to the door through a lost motion member such that the cassette remains fixed in its operative location during engagement and disengagement of the drive mechanism. Additionally, a handle member is pivotally attached to the apparatus for selective displacement from a first position flush with a surface of the housing to a depressed position where it effects displacement of the door from its closed position and to an upright position where it is accessible for carrying of the unit.

3,736,052

REFLEX MOTION PICTURE CAMERA MECHANISM

Jacques Lecoeur, Paris, France, assignor to Eclair International, Paris, France

Filed Aug. 2, 1971, Ser. No. 168,012
Claims priority, application France, Jan. 28, 1971, 7102816
Int. Cl. G03b *1/18*
U.S. Cl. 352—166 **8 Claims**



A rotary shutter, a movable mirror and a film moving mechanism are mounted on the same face of a relatively thin

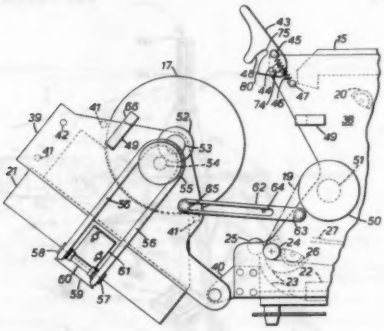
plate in which the film gate and the exposure window are formed. A power shaft is mounted parallel to, and at a relatively short distance from, one face of the plate, with one end flush with a plate edge to permit the direct coupling of the power shaft to the camera motor. Means are provided for coupling the power shaft with the film moving mechanism, the rotary shutter and the movable mirror.

3,736,053

ELECTROSTATIC APPARATUS

Nicholas Gilbert Shreeve, Weybridge, and Kenneth Sidney Blake, Woking, both of England, assignors to Statikon Copiers Limited, London, England

Filed Oct. 22, 1970, Ser. No. 82,971
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **12 Claims**



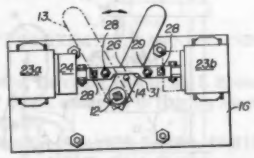
In copying apparatus comprising a drum provided with a photo-conductive surface, copy paper feed means for feeding paper to the drum and drive means for driving the drum surface and the copy paper at the same speed, the drum is carried on first support means the copy paper feed means are carried on second support means, and the two support means are moveable into and out of register, so that main drive means on the said second support means, arranged to drive the copy paper feed means, engage or disengage driven means arranged to drive the said drum without the said main drive means needing to be disengaged.

3,736,054

AUTOMATIC LINE TRANSFER CONTROL

Erich W. Loffler, and Hans Kruger, both of Redwood City, Calif., assignors to Electro-Motion Pacific, Inc., Redwood City, Calif.

Filed Mar. 27, 1972, Ser. No. 238,280
Int. Cl. H01h *3/00*
U.S. Cl. 355—13 **2 Claims**



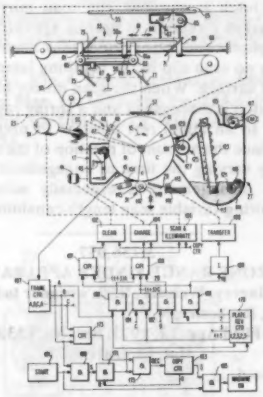
An oscillatory, multi-pole, mechanically held switch has a shaft provided with a lever at one end. The lever extends into a reciprocating box-like yoke which is connected at each end to the armature of a solenoid. Energization of one or the other solenoid causes oscillation of the shaft through about 60° and throws the switch to connect load lines to either public utility lines or emergency lines. In proximity to the yoke are two normally closed micro-switches, one wired in series with each solenoid. A pin on the lever is positioned so that when either solenoid has been energized and the switch lever fully moved in proper direction by the solenoid, the pin opens the micro-switch to de-energize the solenoid. The lever may be manually actuated in emergencies when the controls for the solenoids fail.

3,736,055

REPRODUCTION APPARATUS INCORPORATING ALTERNATE REDEVELOPMENT AND REIMAGING CYCLES FOR MULTIPLE COPIES

Ronald V. Davidge; George W. Hobgood, Jr.; Carl A. Queener; Jesse W. Spears, and Bernard G. Thompson, all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,326
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **9 Claims**

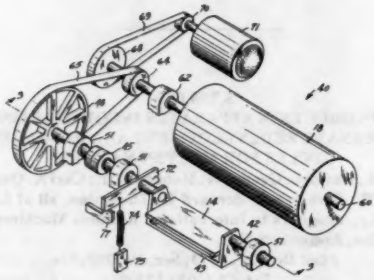


A continuously operating transfer reproduction apparatus includes a cyclic control unit which automatically effects alternate redevelopment and reimaging cycles when reproducing multiple copies of the same master. An electrophotographic plate travels in a closed loop past a moving optical system which images the plate with a light image of the master creating a latent electrostatic image on the plate. The latent image is developed at a developing station and transferred to a substrate at a transfer station as the plate travels therepast. Increased throughput speed is achieved by effecting a fixed number of redevelopment cycles while the moving optical system is resetting. Thus, the plate continues its travel past the resetting optical system to the developing station where the latent image is redeveloped and thence to the transfer station for transfer of the developed image to a second substrate. The plate is then cleaned and charged prior to being reimaged with the light image of the same master, and the process continues until the requisite number of copies have been reproduced. In one embodiment, multiple imaging areas, preferably an odd number thereof, are located on the plate facilitating rapid alternate imaging and redevelopment cycles.

3,736,056
APPARATUS FOR IMPARTING INTERMITTENT ROTATION TO A FIRST MEMBER IN ROTATING REGISTRY WITH A SECOND MEMBER

Robert C. Burnet, Hackettstown, and William F. Slack, Andover, both of N.J., assignors to Van Dyk Research Corporation, Whippany, N.J.

Filed Jan. 27, 1972, Ser. No. 221,310
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 20 Claims

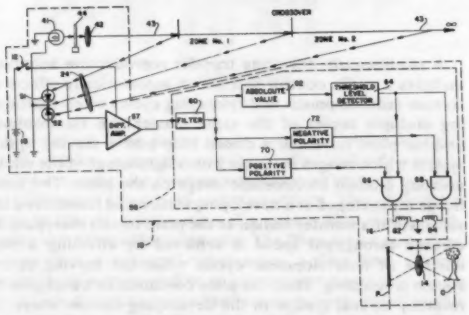


An office copier in which a rotating photoconductive drum is exposed by an intermittently rotating scan mirror. A slip-free clutch intermittently couples the scan mirror to a shaft which rotates in synchronism with the photoconductive drum. When the clutch is engaged, the scan mirror is caused to rotate in a given direction in precise synchronism with rotation of the photoconductive drum, thus insuring that there is substantially no scan slip in the resulting latent image formed on the drum surface. When the scan mirror has completed its scan, the clutch is disengaged and a spring rapidly returns the scan mirror to an initial rest position in preparation for the next scan. Since the amount of rotation of the scan mirror may be varied by varying the time of engagement of the slip-free clutch, this arrangement is especially suitable for office copiers requiring variable scan length capability.

3,736,057
ZONE RANGE FINDER APPARATUS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1971, Ser. No. 133,058
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 7 Claims

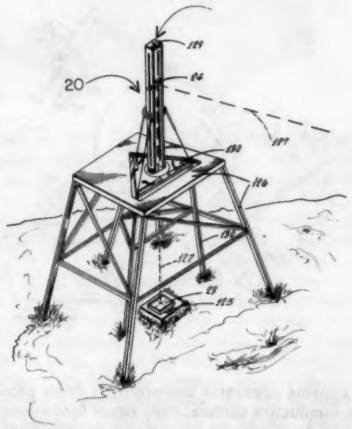


A zone type range finder apparatus is disclosed which includes means for projecting a beam of light toward an object, two spaced photosensitive devices having electrical parameters which respectively vary as a function of the brightness of light incident thereon reflected from the object, and circuitry coupled to the devices for producing a signal having a positive polarity when the object to be photographed is in a first range of distances measured with respect to a reference plane and a negative polarity when the object to be photographed is in a second range of distances measured with respect to the reference plane. The apparatus further includes means responsive to the signal when it reaches a predetermined magni-tude in the positive polarity for indicating that the object is in the first range of distances and responsive to the signal when it declines to a predetermined magnitude in the negative polarity for indicating that the object is in the second range of distances.

3,736,058
ROTATING REFLECTOR LEVEL ROD

Joseph M. Iadarola, 3422 Oliver St., N.W., Washington, D.C.

Filed Apr. 15, 1971, Ser. No. 134,352
Int. Cl. G01c *3/08*; G01b *11/26*
U.S. Cl. 356—4 9 Claims

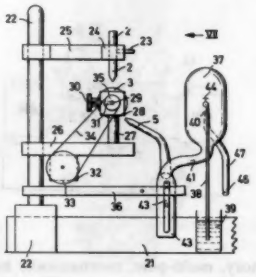


The present invention provides an apparatus and a related method of carrying out leveling survey operations (differential and trigonometric), and is distinguished more particularly by the application of a Rotating Reflector Level Rod which in conjunction with a laser distance measuring instrumentation combines the means of obtaining the required distance measurements to establish the elevations of remote ground points.

3,736,059
DEVICE FOR SPECTROCHEMICAL ANALYSIS OF SOLUTIONS

Wolfgang Schuhknecht, Ensheimer Strasse 36, St. Ingbert, and Manfred Bollsterling, Karl-Marx-Strasse 22, Kaiserslautern, both of Germany

Filed June 17, 1971, Ser. No. 154,149
Int. Cl. G01j *3/30*
U.S. Cl. 356—86 4 Claims



A device for the quantitative spectrochemical analysis of solutions uses two spark discharge electrodes. One of the elec-

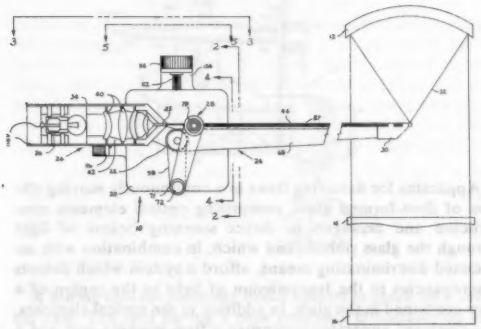
trodes is a carbon rod electrode whose one end is shaped as a truncated cone and has a semi-spherical end surface. The other electrode is a circular carbon disc electrode which has a rotary drive and is located beneath the rod electrode. A condensing chamber atomizer is provided for producing a flow of aerosol from the solution to be tested and a jet for the flow of aerosol is directed at the disk outside the spark discharge zone. The device uses optical and electrical equipment comprises among other things a lenticulated condensor, multichannel spectrometer and photomultipliers.

3,736,060

OPTICAL CONTOUR SCANNER

Marvin J. Mayo, Van Nuys, Calif., assignor to Altair Scientifics, Inc., Van Nuys, Calif.

Filed Feb. 11, 1971, Ser. No. 114,419
Int. Cl. G01b *9/00*
U.S. Cl. 356—124 **7 Claims**



A knife-edge type optical testing instrument including a pinhole source and a knife-edge device superimposed into space by means of a beam splitter. A pinhole source is conducted to the beam splitter from a remote source by means of a light conductor tube so that the bulk of the source is not disposed in the beam. The knife-edge shadow pattern is viewed remote from the operational region of the pinhole and knife-edge by means of a fiber bundle image conductor which transmits the pattern from the operational region of the knife-edge to the viewing apparatus. A triple slide mounting means maintains the pinhole source and knife-edge device in fixed relation but permits translation of the source and device accurately in three orthogonal degrees of freedom relative to a fixed reference. A triple slide base may be manually operable by means of micrometer screws having dial readouts for locating the knife-edge position. The viewing apparatus may include a microscope to provide pinhole demagnification to provide sharper shadows.

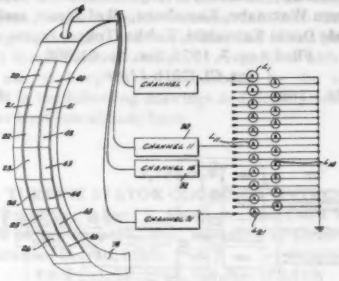
3,736,061

AIRCRAFT PROXIMITY WARNING INDICATOR SYSTEM

Gary L. Knowlden, Torrance, and David I. Blanchard, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 12, 1970, Ser. No. 10,816
Int. Cl. G01b *11/26*
U.S. Cl. 356—141 **8 Claims**

An aircraft warning system is disclosed for detecting and displaying the relative azimuth and elevation of any aircraft xenon beacon in the vicinity. A total field of view for the system is provided by two or more sensor units which have overlapping subfields. The subfield of a given unit is formed by the composite view of an array of radiation-sensitive devices, each coupled to a separate lamp in a display instrument by a signal processing channel adapted to identify beacon radiation



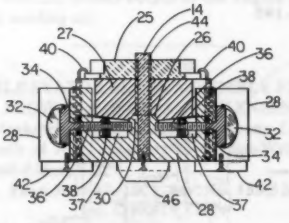
pulses and reduce false alarms. Each lamp illuminates a separate segment of the display instrument to indicate relative azimuth and elevation of the detected beacon.

3,736,062

CO-AXIAL COORDINATOR AND METHOD OF USE IN ALIGNING ROTATING UNITS IN PROPULSION SYSTEMS

Judson D. Murphy, Rte. 4, Box 4, Natchas Dr., Slidell, La.

Filed Mar. 10, 1972, Ser. No. 233,410
Int. Cl. G01b *11/26*; B23q *3/00*
U.S. Cl. 356—153 **5 Claims**

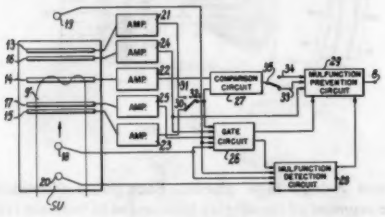


An optical alignment instrument comprises an annular mirror, with an optically flat face, supported in a mirror mount and mounted in an annular base. The mirror and mount are concentrically supported in the base by interfitting spherical surfaces, and radially supported by movable wedging cams mounted therebetween and spaced apart ninety degrees for tilting the mirror independently of said base. A straight target pin, having oppositely disposed ends, is adapted to extend through an annular space defined by the mirror, mount and base, with the oppositely disposed ends respectively projecting from the base and the mirror. The end projecting from the base is adapted to engage in a center recess tapered in the coupling end of every rotating unit in a propulsion system, and to snugly engage said base and loosely engage mirror and mount. Magnetic plates are fixed to the base for removably mounting it, with the snugly engaged target pin, on a coupling end and concentric with the center recess thereof. The optical alignment instrument is used in combination with an alignment telescope, having an illuminated reticle, for aligning the various rotating units of a propulsion system by a new method.

3,736,063
COMPARISON SYSTEM FOR DETERMINING SHAPE AND INTENSITY OF ILLUMINATION OF LUMINOUS OBJECTS

Eiichi Ohno; Mitsuaki Danno, Amagasaki, Hyogo Prefecture; Eizo Yamazaki, Kamakura; Kiyoto Ohkawa, Kamakura, and Osamu Watanabe, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki, Kaisha, Tokyo, Japan

Filed Aug. 7, 1970, Ser. No. 61,908
Int. Cl. G01b 11/04
U.S. Cl. 356—160 6 Claims

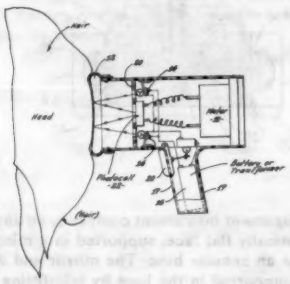


A red hot steel strip travels below two elongated photocells disposed in parallel and in a direction perpendicular to the longitudinal axes of the latter. A comparator detects a difference between outputs from both photocells indicating the widths of the strip end portion and provides a signal upon that difference reaching a predetermined magnitude. The signals serves to cut the strip end portion off. One strip sensor is disposed adjacent each photocell to disable the signal during any erroneous system operation.

3,736,064
HAIR COLOR LEVEL INDICATING METHOD

Paula Jane Kent, Maliby, and Arthur R. McCullough, Van Nuys, both of Calif., assignors to Redkin Laboratories, Inc., Van Nuys, Calif.

Filed Sept. 17, 1970, Ser. No. 73,536
Int. Cl. G01j 3/50
U.S. Cl. 356—195 3 Claims

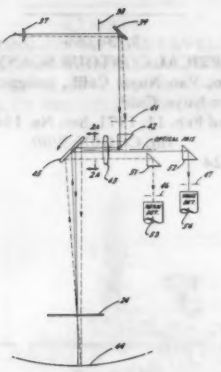


An improved method has been conceived in the art of hair tinting and bleaching, whereby cosmetologist may determine exactly the shade level of a patron's hair for tinting or bleaching purposes. In addition, he can determine exactly the number of shade lifts the hair has undergone during a tinting operation, or the number of stages of bleach the hair has undergone during a bleaching operation. A simple, hand-held instrument is provided which measures the shade level of the patron's hair directly and instantaneously, and which enables the cosmetologist initially to determine the level of color tint to use, and then to determine exactly whether or not the hair has been lifted the desired number of shades. To assist in carrying out the method of the invention, the color tints themselves should be labelled to designate their respective shade levels.

3,736,065
RADIATION SENSITIVE MEANS FOR DETECTING OPTICAL FLAWS IN GLASS

Charles J. Cushing, Churchville; Kurt C. Schwind, and Richard D. Vander Neut, both of Philadelphia, all of Pa., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 9, 1972, Ser. No. 251,833
Int. Cl. G01n 21/32
U.S. Cl. 356—239 10 Claims

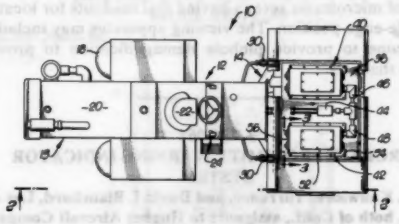


Apparatus for detecting flaws in a continuously moving ribbon of float-formed glass, comprising optical elements constructed and arranged to direct scanning beams of light through the glass ribbon, and which, in combination with associated discriminating means, afford a system which detects discrepancies in the transmission of light in the region of a flaw contained in the glass. In addition to the optical elements, the disclosed apparatus comprises a flaw marking unit and a control unit. Information as to the exact nature and location of marked flaws in the inspected glass may be stored in a computer, in the order of severity of the flaw. The apparatus claimed is particularly adapted to detect ream and wave flaws.

3,736,066
VIBRATORY EARTH COMPACTING APPARATUS

Victor N. Koontz, Los Angeles, Calif., assignor to Pettibone Corporation, Chicago, Ill.

Filed Mar. 15, 1971, Ser. No. 124,023
Int. Cl. E01c 19/28
U.S. Cl. 404—117 4 Claims



A vibratory earth compacting apparatus comprising a vehicle having a main frame and a roller frame mounted on the main frame for vertical movement relative thereto, the roller frame carrying an earth compacting roller rotatable about a transverse axis, and vibrated by two vibration generators which extend longitudinally of the vehicle and are mounted on the roller frame in transversely spaced relation. Each of the vibration generators includes eccentric driving and driven

shafts extending longitudinally of the vehicle and geared together. The gearing between the driving and driven shafts of each generator includes meshed driving and driven gears and the driven gear is axially movable out of mesh with the driving gear so that the driven gear, and its eccentric shaft, may be displaced angularly relative to the driving gear, and its eccentric shaft, thereby adjusting the amplitude of vibration independently of the frequency. The driven gears of the two generators, and their eccentric shafts, are angularly adjusted equally and in opposite directions so as to cancel out horizontal vibration components for a net horizontal vibration output of zero.

3,736,067

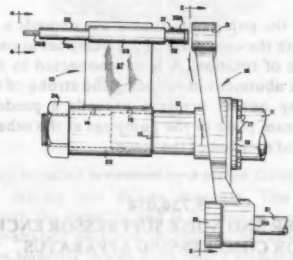
REBORING TOOL FOR BRAKE SPIDERS

Lee R. Akins, 1384 N. 33rd St., Springfield, Oreg.

Filed Dec. 15, 1971, Ser. No. 208,481

Int. Cl. B23b *45/14*

U.S. Cl. 408—79 **9 Claims**



A boring tool for repairing brake spiders in place on a vehicle axle. The tool having a base rotatably mountable on the axle spindle with adapter means permitting tool use on various spindle configurations. Elongate bearing sleeves radially spaced from the base are adapted for rotation into axial alignment with the anchor pin bores of the brake spider. A retention bar and a boring bar interchangeably journalled in said sleeves respectively position the tool. Rotation of the base subsequent to a first boring operation permits bar extraction and interchange prior to a second boring operation. Additional structure is shown providing feed means for the boring bar. A modified form of the invention permits permanent retention of retention and boring bars within their respective sleeves.

3,736,068

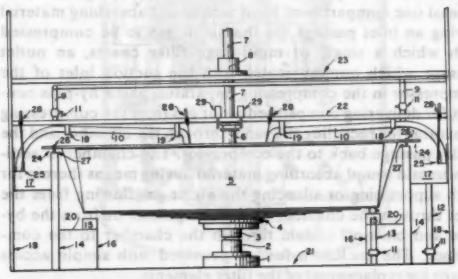
RECYCLE POWER UNIT

Cecil Lloyd Porter, Route 1, Box 242, Courtland, Ala.

Filed Nov. 3, 1970, Ser. No. 86,436

Int. Cl. F04d *1/14*

U.S. Cl. 415—89 **1 Claim**



This Recycle Power Unit is for the purpose of creating a massive power to operate electric generators or other massive power requirements.

This Recycle Power Unit is a unit that takes water and by recycling it on a massive scale uses it to create power by the Unbalanced Force of the Siphons and the Centrifugal Force acting on the Turbines and the ejection nozzles.

The centrifugal forces are built up by a starter motor till they exceed the resistance of friction and air resistance till these forces become greater than the resistance forces. After exceeding these resistance forces they are at this point an unbalanced force which is constantly resupplied with water for recycle use to keep them unbalanced by the siphons as described in the following drawings and descriptions of Recycle Power Unit you already have.

3,736,069

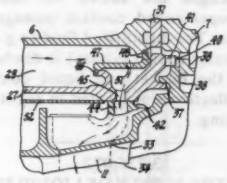
TURBINE STATOR COOLING CONTROL

Paul E. Beam, Jr.; Albert L. Hunt, Jr., and Esten W. Spears, Jr., all of Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 28, 1968, Ser. No. 770,919

Int. Cl. F01d *5/14*

U.S. Cl. 415—115 **5 Claims**



The stator of a gas turbine includes an arrangement for controlling flow of cooling air to the vanes of the second stage turbine nozzle from the engine compressor. Control is by a valve defined by two rings extending around the exterior of the turbine nozzle which have different coefficients of thermal expansion so that the gap between them varies in accordance primarily with the temperature of the cooling air which tends to increase with the power output of the engine and thus with the need for cooling air.

3,736,070

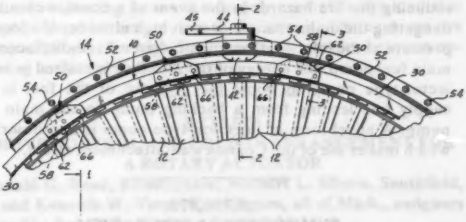
VARIABLE STATOR BLADE ASSEMBLY FOR AXIAL FLOW, FLUID EXPANSION ENGINE

Seymour Moskowitz, Fort Lee, and Anthony Leto, Franklin Lakes, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed June 22, 1971, Ser. No. 155,524

Int. Cl. F01d *17/14*

U.S. Cl. 415—147 **12 Claims**



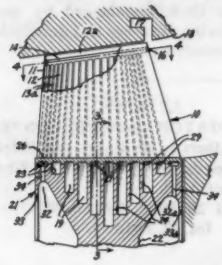
In an axial flow, fluid expansion engine having stator vanes adjustable, through a rotatable unison ring and linkage assembly, to vary the area of the throat defined between the next adjacent stator vanes, a frame for circumferentially supporting the unison ring to prevent ovalizing of the ring and, hence, provide accurate adjustment of the size of each of the throat areas.

3,736,071

BUCKET TIP/COLLECTION SLOT COMBINATION FOR OPEN-CIRCUIT LIQUID-COOLED GAS TURBINES

Paul H. Kydd, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,057
Int. Cl. F01d 5/18
U.S. Cl. 416—97 5 Claims



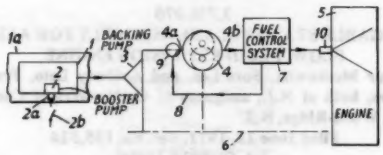
Bucket tip designs are shown for manifolding fluid discharge from open-ended coolant passages in a liquid-cooled gas turbine. The manifolded fluid (e.g., steam and excess water in a water-cooled system) is discharged from the trailing edge of the bucket and liquid content thereof is thrown into a collection slot located in register therewith in the wall of the casing.

3,736,072

SYSTEMS FOR THE SUPPLY OF LIQUID FUEL TO GAS-TURBINE ENGINES

Horace George Turner, Chandler's Ford, and Robert Spurgeon Wood, Gosport, both of England, assignors to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Aug. 24, 1971, Ser. No. 174,366
Claims priority, application Great Britain, Aug. 25, 1970, 40,897/70
Int. Cl. F04b 23/04, 23/14; F02c 9/04
U.S. Cl. 417—79 5 Claims



To permit the booster pumps in aircraft wing tanks to be switched-off immediately after starting of the engine, thus reducing the fire hazards in the event of a crash, without endangering the maintenance, even at high altitude, of adequate pressure at the inlet 4a of an engine-driven fixed-displacement main fuel pump, the energy of the spill flow is utilized in an injector-type pump to boost the pressure of the fuel in the supply line leading from a backing pump to the main fuel pump. A novel form of injection-type pump is also described which makes use of the Coanda wall-attachment effect.

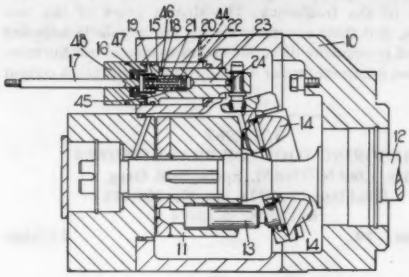
3,736,073

PUMP CONTROL MECHANISM

Robert Edwin Walmsley, Marlow, England, assignor to Joseph Lucas Industries, Limited, Birmingham, England

Continuation-in-part of Ser. No. 866,253, Oct. 14, 1969, abandoned. This application Dec. 29, 1971, Ser. No. 213,475
Int. Cl. F04b 49/00
U.S. Cl. 417—222 3 Claims

The invention relates to a control mechanism for a swash plate type pump wherein the cam plate can be moved to opposite inclinations relative to the axis of the rotation of the rotor. An axially movable pump stroke controlling member is connected to means for setting the member through a means permitting lost motion against the action of a spring or the like. A piston subjected to the output pressure of the pump is provided with an arm to coact with an abutment controlling



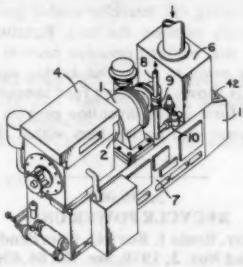
member, when the pump output pressure exceeds a predetermined value with the cam plate of the pump set at one inclination to the axis of rotation. A lever connected to the piston coacts with the abutment in reducing the stroke of the pump when the pump output pressure exceeds a predetermined value with the cam plate of the pump set at the other inclination to the axis of rotation of the rotor.

3,736,074

INLET, FILTER AND NOISE SUPPRESSOR ENCLOSURE FOR COMPRESSING APPARATUS

John R. Kilbane, East Aurora, and Peter G. Wendt, Williamsville, both of N.Y., assignors to Worthington-Cei Incorporated, Buffalo, N.Y.

Filed Apr. 20, 1972, Ser. No. 245,718
Int. Cl. F04b 49/02
U.S. Cl. 417—279 7 Claims



A composite inlet, filter and noise suppressor enclosure to be connected to apparatus for compressing air or gas includes at least one compartment lined with sound absorbing material having an inlet passage for the air or gas to be compressed with which a single or multi-stage filter coacts, an outlet passage which communicates with the suction inlet of the compressor in the compressing apparatus, and a by-pass conduit for delivering compressed air or gas from the compressing apparatus for recycling the same through the chamber and the outlet passage back to the compressor. The chamber in addition to said sound absorbing material having means therein for both suppressing or silencing the air or gas flowing from the inlet through the chamber to the compressor or from the by-pass and blow-off system through the chamber to the compressor. The enclosure further provided with simple access means for replacement of the filter elements.

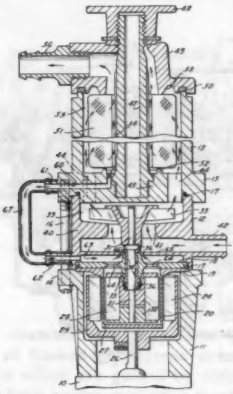
Additionally, the combination of the enclosure above described with an enclosure for housing all compressor control system components, meters, etc.

3,736,075

PUMP AND FILTER UNIT

Walter J. Otto, Wantagh, N.Y., assignor to Sethco Manufacturing Corp., Freeport, N.Y.

Filed Feb. 16, 1971, Ser. No. 115,265
Int. Cl. F04b 35/04
U.S. Cl. 417—366 6 Claims



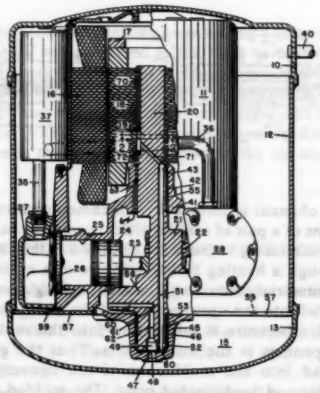
A pump impeller is rotated by a motor through magnetically coupled driving and driven magnets. The driven magnet rotates with the impeller and is located in a chamber defined by a cup-shaped partition interposed between the two magnets. The impeller draws dirty liquid through the pump inlet and delivers it to a filter housing in which the liquid is filtered. Through a passageway located between the driven magnet chamber and the pump inlet, filtered liquid is introduced into the driven magnet chamber; the filtered liquid also flows through the passageway to the pump inlet through a restricted opening surrounding the shaft on which the impeller and driven magnet are mounted. The pump drive motor, pump body, and filter housing are all axially aligned.

3,736,076

COMPRESSOR LUBRICATION SYSTEM

Robert W. Ayling, Briston, Va., assignor to Cardinal Compressor Corporation, Bristol, Va.

Filed Mar. 1, 1972, Ser. No. 230,652
Int. Cl. F04b 39/02
U.S. Cl. 417—372 14 Claims



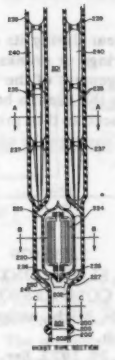
A refrigerant compressor has a vertically extending crankshaft with its lower end in an oil sump. An off-center bore extends vertically within the crankshaft, and is connected through radial bores to the bearings. The bottom of the off-center bore is connected to the outlet of an oil pump formed in the bottom of the crankshaft. The inlet of the oil pump is connected to the oil in the sump. A gas pump is formed in the lower portion of the crankshaft above the oil pump. The gas pump has its inlet connected to the inlet of the oil pump, and has its outlet connected through a radial bore in the crankshaft to the space above the sump. Another gas pump is formed in the upper portion of the crankshaft and has its inlet connected to the top of the off-center bore, and its outlet within the interior of a motor compartment above the off-center bore.

3,736,077

HOIST PIPING FOR DEEP-SEA MINERAL SLURRY

Ernest Blaney Dane, Jr., 57 Tyler Road, Belmont, Mass.

Division of Ser. No. 754,191, Aug. 21, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,034
Int. Cl. F16l 9/12; E21b 7/12
U.S. Cl. 417—424 9 Claims



Pipe sections adapted for constructing into a lengthy fluid circuit for hoisting mineral slurry from a mining plant working a deep ocean bed to a surface ship. Each pipe section possesses termini for facilitating the initial under-water construction of the circuit and strength for supporting the mining plant as it is simultaneously lowered to the bed. A pipe section contains a pump for lifting slurry through its length and a dump-valve for dumping slurry in the event a malfunction occurs in the circuit. A series of buoyancy tanks separated by cushions are disposed along the sides of a pipe section contribute counter-balancing forces that largely neutralize the load that would otherwise accumulate in the circuit. The cushions are adapted to prevent high direct contact pressures between opposing surfaces of adjacent tanks.

3,736,078

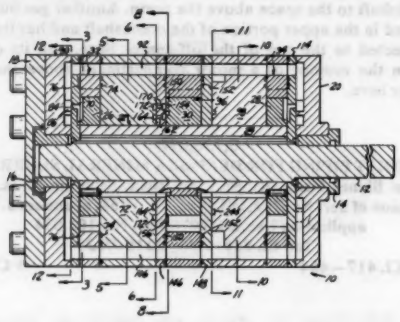
DRIVE CONTROL AND HOLD-IN ARRANGEMENT FOR A ROTARY ACTUATOR

Ronald G. Read, Birmingham; Norbert L. Sikora, Southfield, and Kenneth W. Verge, Farmington, all of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed July 1, 1971, Ser. No. 158,757
Int. Cl. F01c 1/02; F03c 3/00; F04c 1/02
U.S. Cl. 418—60 22 Claims

A rotary actuator of the type in which a ring gear is orbited within a stationary reaction gear and about an output gear, the ring gear driven to so orbit by a torque producing vector which is constantly indexing about the circumference thereof to produce its orbiting motion is disclosed, in which an ar-

rangement is provided for producing a hydraulically generated hold-in vector acting on the ring gear at an angle displaced from the torque producing vector and which also constantly indexes about the circumference thereof in the same manner so that the ring gear is maintained in engagement with the



reaction and output gear during its orbiting motion without the use of rotary bearings or cranks. This arrangement also provides for a disengagement of the ring gear from the reaction and output gear in the event a hold-in vector of a certain magnitude is not produced to thus provide a means to controllably discontinue drive through the unit.

3,736,079

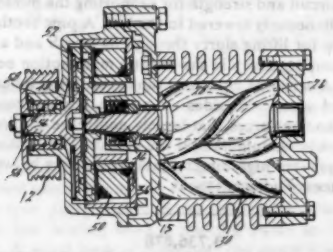
LUBRICATING OIL FLOW CONTROL FOR A ROTARY COMPRESSOR

Don B. Kantz, Ferndale, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 29, 1972, Ser. No. 239,064

Int. Cl. F04c *17/00*

U.S. Cl. 418—77 **4 Claims**



A rotary compressor adapted especially for pumping fluids in a closed circuit of an air conditioning system comprising a pair of meshing helical rotors adapted for rotation about parallel axes and a lubrication oil flow path including registering oil ports in one of said rotors and in an adjacent housing wall whereby fluid is admitted to the lubrication oil circuit intermittently at a rate that is dependent upon the speed of the rotors thereby providing a desired higher lubricating oil flow at high compressor speeds and a reduced flow at lower compressor speeds to establish lubrication, sealing and cooling of the relatively movable parts of the compressor.

3,736,080

ROTARY-PISTON INTERNAL-COMBUSTION ENGINE

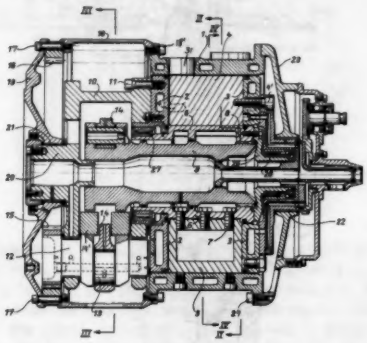
Huschang Sabet, Edward-Pfeiffer-Strasse 67, Stuttgart, Germany

Filed Apr. 27, 1971, Ser. No. 137,870

Claims priority, application Germany, May 2, 1970, P 20 21 640.4

Int. Cl. F01c *1/00*; F03c *3/00*; F04c *17/00*

U.S. Cl. 418—34 **10 Claims**



In a rotary-piston internal-combustion engine in which two sets of pistons rotate about a common axis while in sealing engagement with a cylindrical casing wall, and the two sets are connected so that the pistons of one set rotate at uniform speed and those of the other set rotate at cyclically varying speed to expand and contract combustion chambers circumferentially bounded by the pistons, the uniformly rotating pistons are fixedly fastened to the radial end walls of the casing, and motion is transmitted between the two sets by crankshafts journaled in a gear carrier fixedly fastened to one of the end walls and oscillating a mounting sleeve for the pistons of the other set. The crankshafts are rotated by respective gears meshing with a ring gear fastened to the normally stationary cylindrical casing wall.

3,736,081

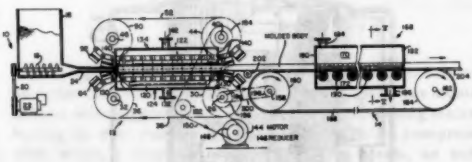
APPARATUS FOR CONTINUOUSLY PRODUCING BODIES OF SYNTHETIC THERMOPLASTIC MATERIAL

Joseph T. Yovanovich, Rosemont, Pa., assignor to Milton Berger, Philadelphia, Pa., a part interest

Filed June 4, 1971, Ser. No. 149,948

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 C **5 Claims**



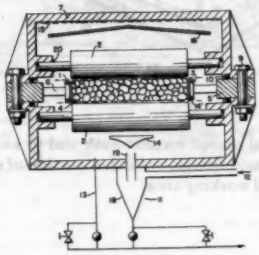
A mold channel is formed by attachments carried by two straight runs of a pair of endless articulated link chain belts all moving continuously in the same direction at the same rate of speed through a heating zone. Granules of a synthetic thermoplastic material containing a heat expanding agent are continuously fed into the upstream end of the mold channel, and steam under pressure is introduced into the mold channel through openings in the attachments. Thus the granules of material fed into the mold channel are converted into a coherent foamed agglutinated body. The molded body continuously issuing from the mold channel is received by an endless flat belt conveyor and carried thereby through a coating zone.

3,736,082

STEAM CHAMBER

Kurt Wick, Frankenthal, and Norbert Holl, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Nov. 26, 1971, Ser. No. 202,077
Int. Cl. B29d 27/04
U.S. Cl. 425—4 C 5 Claims



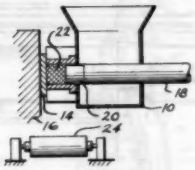
The steam chamber in an apparatus for the continuous manufacture of foamed polystyrene strands has perforated conveyor belts which are guided by rolls and which form, together with foam guides, a channel for the accommodation of particulate polystyrene which has been preformed but is capable of further expansion and which are positively and sealingly connected, via spacing strips, to two housing parts which encompass said channel.

3,736,083

RAM TIP SECURING ARRANGEMENT

Robert Davis Mitchell, Solon, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1971, Ser. No. 213,315
Int. Cl. B30b 11/04
U.S. Cl. 425—78 10 Claims



A ram shaft for a briquetting press having a removable shaft tip with the tip being secured to the shaft by a pair of wedge shaped members that extend through aligned passageways formed in the ram shaft and the tip member. When occupying one position, the wedges are effective to retain the removable tip in place. They may be reversed however and used to forcibly break the connection between the tip and the ram shaft.

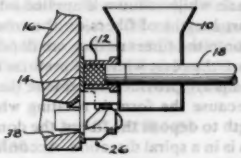
3,736,084

BRIQUETTING PRESS WITH BRIQUETTE CONVEYING FACILITY

Robert Davis Mitchell, Solon, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1971, Ser. No. 214,574
Int. Cl. B30b 11/04
U.S. Cl. 425—78 7 Claims

A briquetting press of the stationary anvil movable die type provided with a passageway through the end frame portion of the press to which the anvil is secured and having a foraminous trough for catching the briquettes as they fall from the anvil and directing them through the passage in the frame and also having a pusher device that forcibly pushes the



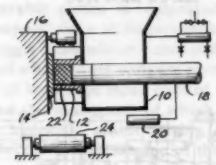
briquettes from the trough through the end frame passage incident to moving the die and its associated mechanism toward the anvil.

3,736,085

BRIQUETTING PRESS WITH BRIQUETTE REMOVAL MECHANISM

Robert Davis Mitchell, Solon, Ohio, assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 29, 1971, Ser. No. 213,367
Int. Cl. B30b 11/04
U.S. Cl. 425—78 8 Claims



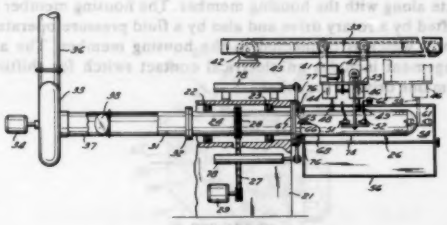
A briquetting press of the stationary anvil movable die type provided with mechanism for engaging a briquette that sticks to the anvil upon retraction of the die to forcibly remove the briquette from the anvil. The mechanism is actuated incident to movement of the die and the associated chip box.

3,736,086

APPARATUS FOR MAKING FIBER PREFORM

Arthur J. Wiltshire; Henry U. Ranallo, both of Cleveland, and Frank E. Czumber, Chardon, all of Ohio, assignors to Structural Fibers, Inc., Chardon, Ohio

Division of Ser. No. 742,692, July 5, 1968, Pat. No. 3,654,002.
This application July 1, 1971, Ser. No. 158,774
Int. Cl. B29c 13/00, 27/26
U.S. Cl. 425—92 11 Claims



A preform suitable for the bag molding of fiber glass articles such as tanks or the like is disclosed. The preform includes a tubular portion and an integrally formed end wall at one end. The wall of the preform consists of a mat formed by a multitude of short lengths of fibers randomly oriented in the wall and bonded by a setable resin which does not fill the voids

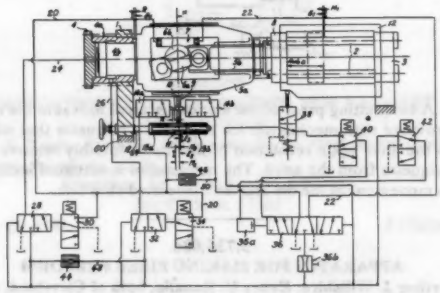
between the fibers. The form is free of overlaps and seams. A machine and a method for forming this preform is also disclosed. The machine includes a perforated form rotated about its longitudinal axis while vacuum is applied internally. Choppers deposit short lengths of fibers on the rotating form and resin is sprayed onto the fibers as they are deposited. An oven is provided to cure the resin while the preform remains on the form. Power means are provided to remove the preform from the machine. Because the form is rotating while the cutters traverse the length to deposit the fibers, the dominant orientation of the fibers is in a spiral direction. According to a further aspect of the invention, the preform is wound with a continuous filament so that the preform will have additional reinforcing strength characteristics and so that the outside diameter of the preform will be dimensioned to fit within a tubular mold with minimum clearance.

3,736,087

MOLD CLOSING UNIT WITH SEPARATELY ACTING ROTARY AND FLUID PRESSURE PISTON DRIVES

Edwin Ruegg, Netstal, Switzerland, assignor to Maschinenfabrik Giesserei Netstal AG, Netstal, Switzerland

Filed Dec. 17, 1970, Ser. No. 99,051
Int. Cl. B29f *1/00*
U.S. Cl. 425—137 **6 Claims**



A mold plate closing mechanism includes a housing member which is connected to a movable mold plate which is guided for movement toward and away from a fixed mold plate along with the housing member. The housing member is shifted by a rotary drive and also by a fluid pressure-operated piston which is connected to the housing member. The arrangement includes an electrical contact switch for shifting from one drive to the other.

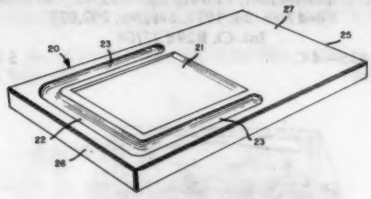
3,736,088

TOMALE MAKING DEVICE

Antonio J. Jimenez, 472 North 13th St., San Jose, Calif.

Filed July 26, 1972, Ser. No. 275,228
Int. Cl. A21c *3/00*
U.S. Cl. 425—218 **4 Claims**

A tamale making board has in its top surface a shallow rectangular depression to receive corn husk and a U-shaped trough adjacent and parallel to three sides of said depression. A flat edged spreader blade provides the means to uniformly



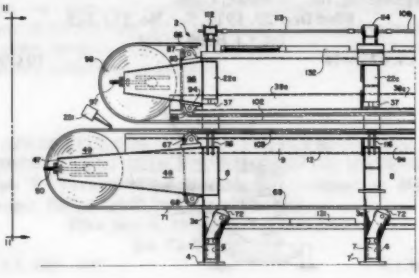
distribute material placed on said husk and to sweep the excess thereof into said trough. A further portion of said surface provides a general working area.

3,736,089

APPARATUS FOR MOLDING A RIGID PRODUCT FROM SYNTHETIC RESINOUS MATERIALS

Lee F. Ross, Los Gatos; James E. Wilkinson; Fred A. Craig, both of San Jose, and Allan M. Hudson, Mountain View, all of Calif., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 8, 1971, Ser. No. 107,174
Int. Cl. B28b *3/12*
U.S. Cl. 425—174.4 **4 Claims**



A machine operable to produce molded synthetic products in finished form in a continuous process, including mixing, pouring, molding, and curing the resultant product.

3,736,090

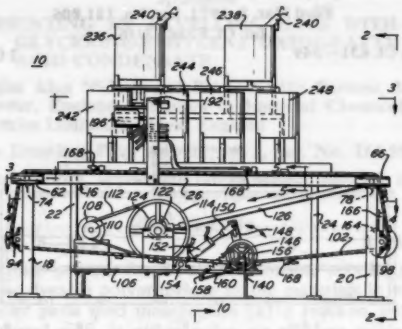
APPARATUS FOR CONTINUOUSLY MAKING PEARLESCENT PLASTIC SHEETING

George R. Adey, Huntingdon Valley, and Wilmer Souder, Jr., Pottstown, both of Pa., assignors to Denton Plastic Products Corp., Southampton, Pa.

Division of Ser. No. 638,482, May 15, 1967, Pat. No. 3,518,333. This application Nov. 26, 1969, Ser. No. 31,451
Int. Cl. B28b *1/04*
U.S. Cl. 425—224 **16 Claims**

Apparatus and method for continuously making pearlescent sheeting including a reciprocating surface mounted on an

endless chain driven by an intermittent drive. Pumps deliver resin material from containers to one or more vertically



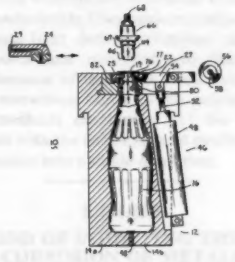
aligned nozzles being traversed across the surface. Initiation of displacement of the surface is regulated by position of traversing nozzle.

3,736,091

APPARATUS FOR FINISHING HOLLOW BLOW MOLDED ARTICLES

Joseph R. Reilly, Naugatuck, Conn., assignor to Monsanto Company, Saint Louis, Mo.

Filed Mar. 3, 1971, Ser. No. 120,514
Int. Cl. B29d 23/03
U.S. Cl. 425—326 6 Claims



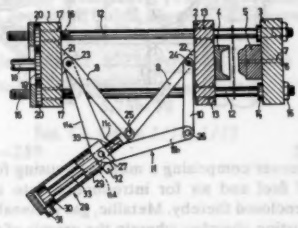
A method and apparatus for finishing a blow molded plastic article having flash attached to a neck portion thereof which includes gripping and relatively moving the flash and the article away from each other to sever the flash at a portion immediately adjacent the end of the neck which is at an elevated temperature with respect to the neck portion, and thereafter advancing a forming mandrel into the neck to roll an irregular edge left in the area of flash severance forwardly toward the body of the article and outwardly against the wall of the neck to form a smooth finish. The apparatus includes an inwardly directed step in the blow mold at the extremity of the neck defining portion of the mold whereat a thickened and therefore elevated temperature portion of the plastic is formed on expanding the parison, this thickened section being the area where severing occurs during finishing.

3,736,092

APPARATUS FOR TRANSMITTING MOTION TO MOLD SECTIONS IN INJECTION MOLDING MACHINES

Karl Konig, Munich; Ernst Wurl, Weiboldshausen, and Richard Herbst, Munich, all of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed Apr. 8, 1971, Ser. No. 132,466
Claims priority, application Germany, Apr. 11, 1970, P 20 17 476.9
Int. Cl. B29f 1/00
U.S. Cl. 425—450 17 Claims



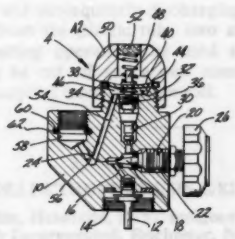
Clamping apparatus for an injection molding machine wherein a movable platen is reciprocable between a fixed platen and a support for a stationary mold section has at least one pair of toggle links whose outer ends are pivoted to the two platens and whose inner ends are pivoted to each other, at least one pair of levers the outer ends of which are pivoted to the platens and the inner ends of which are pivoted to each other, and a hydraulic motor having a cylinder which is pivotally connected to at least one of the levers and a piston rod pivotally connected to the pin coupling the inner ends of the toggle links. When the movable platen is remote from the support, the toggle links make with each other an angle of less than 90° and the piston rod of the hydraulic motor makes with the tie rods for the movable platen an acute angle which is preferably less than 45°. This insures the generation of a substantial closing force as soon as the movable platen begins to advance toward the support and prevents excessive acceleration or deceleration of the movable platen during movement away from or toward the fixed platen.

3,736,093

INTEGRAL REGULATED HAND TORCH

Cadet E. Bowman, and Frank Hayward, both of Sycamore, Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Dec. 14, 1971, Ser. No. 207,931
Int. Cl. F23d 13/04
U.S. Cl. 431—89 2 Claims



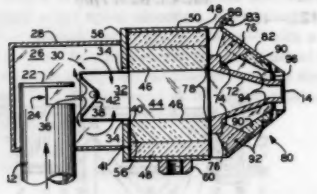
A portable gaseous hydrocarbon-burning torch having a pressure regulated outlet valve wherein the torch will produce a flame having predetermined characteristics throughout a wide range of ambient operating temperatures.

3,736,094

APPARATUS FOR GENERATING HIGH ENERGY GASEOUS BLAST

Donald Eugene Shisler, Napoleon, Ohio, assignor to Johns Manville Corporation, New York, N.Y.

Filed June 1, 1971, Ser. No. 148,841
Int. Cl. F23r 1/02
U.S. Cl. 431—158 23 Claims



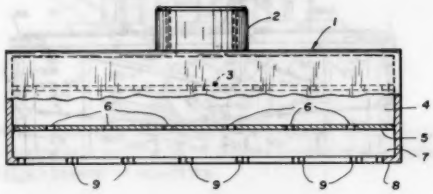
A gas burner comprising a metallic housing for receiving a premix of fuel and air for introduction into a combustion chamber enclosed thereby. Metallic, gas permeable walls form the combustion chamber wherein the premix of fuel and air is burned producing a high temperative effluent which is directed by a metallic converging slot nozzle to an outlet which shapes the effluent while its velocity is increased by the nozzle to form a high temperature, wide, flat stream of uniform velocity and temperature which is an effective filament attenuator for materials such as glass.

3,736,095

GAS-FIRED BLAST TYPE BURNER

Vincent C. Leatherby, Glenshaw, Pa., assignor to Fuel Equipment Company, Sharpsburgh, Pa.

Filed Mar. 8, 1971, Ser. No. 121,806
Int. Cl. F23d 13/36
U.S. Cl. 431—349 2 Claims



This invention relates to a gas-fired burner of the blast type, comprising a substantially rectangular unit having a burning grid spaced downwardly of the top of the unit. The top has an inwardly projecting lip with spaced notches to prevent blowout from cross drafts and to create a piloting action. Below the grid is spaced a perforated baffle plate for evenly distributing the gas-fired mixture before reaching the burning grid.

CHEMICAL

3,736,096

PRINTING BY LEVELLING DYES WITH GLYCERINE-ETHYLENE OXIDE-FATTY ACID CONDENSATE

Douglas Alan Nichols and Brian Neville Parsons, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 12, 1971, Ser. No. 161,999

Claims priority, application Great Britain, July 24, 1970, 35,981/70

Int. Cl. D06p

U.S. Cl. 8—62 8 Claims

Printing process for wool, polyamides, acrylic, polyester or dyeable polypropylene textile materials in which the print paste used incorporates (a) a reaction product of glycerol with, in either order, an alkylene oxide and a carboxylic acid having four or more carbon atoms and (b) a surface-active agent, the amount of (a) being from 0.1% to 0.5% of the total weight of the print paste and the amount of (b) being at least equal to that of (a).

3,736,097

PROCESS EMPLOYING AQUEOUS MEDIA IN THE TREATMENT OF FIBROUS MATERIALS

Paul R. Glor, Piscataway, and Arthur H. Drelich, Plainfield, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 4,405, Jan. 20, 1970, abandoned. This application Jan. 5, 1971, Ser. No. 104,148

Int. Cl. D06m *5/02, 5/16, 5/26*

U.S. Cl. 8—131 14 Claims

A method of treating fibrous materials to render them more amenable to subsequent textile and papermaking processes employing aqueous media which comprises: treating fibrous materials with a softening and swelling agent whereby the individual fibers become soft, limp and swollen; exposing said fibrous materials to textile or papermaking processes employing aqueous media wherein the individual fibers show less tendency toward undesirable fiber agglomeration, exhibit greater tendency toward fiber individualization, and demonstrate enhanced response and receptivity to fiber processing or manipulation because of their soft, limp and swollen nature; and forming a nonwoven fabric of the individual fibers. Also included are methods combining (1) the treating of the fibrous materials with the softening and swelling agent and (2) the textile processes into a single operation.

3,736,098

METHOD OF INHIBITING THE ACID CORROSION OF METALS

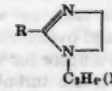
Toshiya Kataoka, Chigasaki-shi, and Atunobu Takada, Tokyo, Japan, assignors to Nisshin Oil Mills, Ltd., Tokyo, Japan

No Drawing. Filed Jan. 18, 1972, Ser. No. 218,825

Int. Cl. C23f *11/14*

U.S. Cl. 21—2.7 R 9 Claims

A method of preventing the acid corrosion of metals which consists in inhibiting acid solutions from corroding metals by mixing with said acid solutions an anticorrosive composition prepared by the reaction of benzyl halides and materials mainly consisting of imidazoline derivatives having the following structural formula:



$C_3H_6(NHC_2H_4)_m \cdot NH_2$

where:

R=an alkyl, alkenyl or hydroxyalkenyl radical having 5 to 21 carbon atoms

m=0 or integer of 1 to 3

3,736,099

PIPETTING DEVICE

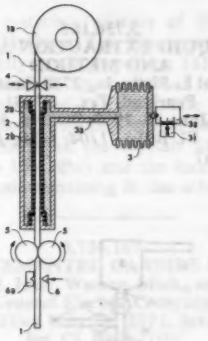
Geoffrey S. Begg, Heidelberg, Victoria, Australia, and Nils Bertil Jacobson, Solna, Sweden, assignors to Medinova AB, Solna, Sweden

Filed Apr. 21, 1971, Ser. No. 135,989

Claims priority, application Sweden, Apr. 27, 1970, 5,756/70

Int. Cl. G01n *1/10, 1/12*

U.S. Cl. 23—259 14 Claims



Pipetting device, in which a disposable plastic tube supplied from a store roll is used as a pipette. A portion of the plastic tube extends through an elongate, cylindrical chamber having a tube-shaped elastic wall surounding the plastic tube. This chamber is filled with liquid and communicates with a compressible bellow also filled with liquid. By compression of the bellow it is possible to compress the portion of the plastic tube surrounded by the liquid-filled chamber and thus to vary the internal volume of said portion of the plastic tube. This variation of the internal volume of the plastic tube is used for sucking up a predetermined liquid volume to be pipetted into the plastic tube and subsequently discharging this pipetted liquid volume from the plastic tube into another vessel. After each pipetting operation the used section of the plastic tube can be cut off and a new unused section of plastic tube be supplied from the store roll.

3,736,100

IMMUNOELECTROPHORESIS GEL TRAY

Stephen D. Rains, Henrietta, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.

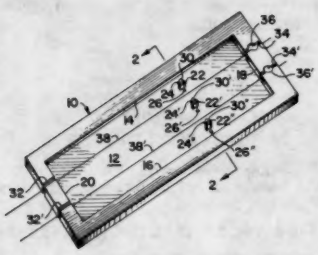
Filed May 24, 1971, Ser. No. 146,388

Int. Cl. B01k *5/00;* G01n *31/02, 33/16*

U.S. Cl. 23—253 R 11 Claims

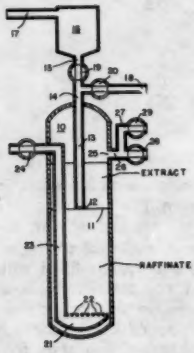
An electrophoresis tray having wire-like elements dis-

posed therein for injecting into a gel carried by the tray, serum and anti-serum to provide for electrophoresis and



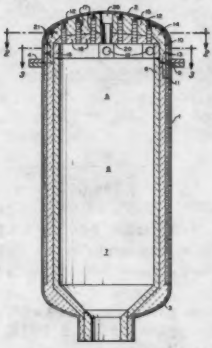
subsequent diffusion of the anti-serum to precipitate proteins.

3,736,101
LIQUID-LIQUID EXTRACTION APPARATUS AND METHOD
Othel L. Pirtle, Jr., 2718 Stratford, Pearland, Tex. 77581
Filed June 13, 1969, Ser. No. 832,954
Int. Cl. B01d *11/04*; G21g *1/00*
U.S. Cl. 23—267 **2 Claims**



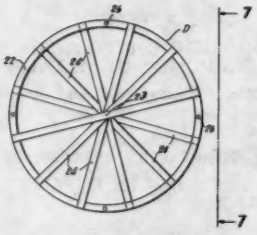
An apparatus and method for liquid-liquid extractor, the apparatus comprising a substantially cylindrical vertically aligned extraction chamber, a tube extending through an upper area of the wall of said chamber and extending into said chamber a distance such that its interior end which is open to said chamber terminates at a point just above the extract-raffinate interface within said chamber, the end of said tube exterior to said chamber being provided with valving means permitting alternate open communication with a solvent source and an extract receiving container, an inlet and outlet means in an upper area of the wall of said extraction chamber, said inlet and outlet means being in open communication with said chamber above the fluid fill level of said chamber, said inlet means also being in open communication with an inert gas source and said outlet means opening to a vent and said inlet and outlet means being provided with valve means for controlling flow through said inlet and outlet means, and a gas distributing means adjacent the lower end of said chamber for introducing an inert gas into the lower portion of said chamber, said gas distributing means being provided with a valve means for controlling introduction of gas into said chamber through said gas distributing means.

3,736,102
CARBON BLACK REACTOR
Joseph S. Rogers, Jr., and Glenn J. Forseth, Borger, Tex., assignors to Phillips Petroleum Company
Filed Nov. 19, 1970, Ser. No. 90,935
Int. Cl. F27d *1/04*
U.S. Cl. 23—259.5 **1 Claim**



A carbon black reactor employing a dished head at its feed inlet, this head being adapted with a suspended arch and an interpositioned layer of insulation.

3,736,103
INCINERATOR COMBUSTION APPARATUS
Paul H. Stibbe, De Pere, Wis., assignor to TEC Systems, Inc., De Pere, Wis.
Filed Sept. 20, 1971, Ser. No. 182,018
Int. Cl. F23g *7/06*
U.S. Cl. 23—277 C **4 Claims**



Apparatus for incinerating gaseous waste material, for example, the combustible portions of the effluents from various industrial equipment such as wire enameling ovens, metal coating ovens, paint ovens, web dryers or the like. The apparatus includes a diffusor for the combustible chamber and which acts to create turbulence and flow

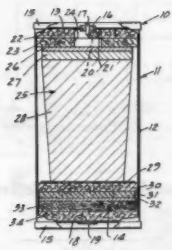
disturbance to the gaseous material as it proceeds through the combustion chamber, thereby promoting effluent mixing for complete combustion.

3,736,104

OXYGEN GENERATOR CELL

John P. Churchill, Indiatlantic, and Tommy Lewis Thompson, Melbourne, both of Fla., assignors to Life Support, Inc., Melbourne, Fla.

Filed May 17, 1971, Ser. No. 143,853
Int. Cl. B01j 7/00
U.S. Cl. 23—281 14 Claims



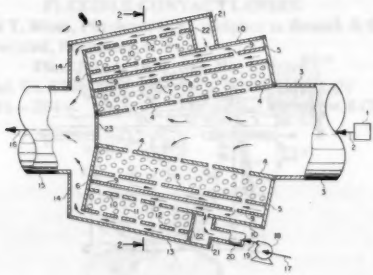
Chemical oxygen generators in the form of disposable tin plated steel cans housing a chlorate candle, a starter, and filters where needed to remove contaminants and also serve as shock absorbing means. The cans have oxygen delivery outlets and starter actuators which can be at one end of the can or separated at both ends of the can. The preferred oxygen generating chemical is sodium chlorate, the decomposition of which is catalyzed by sodium peroxide.

3,736,105

CATALYTIC MUFFLER

John F. Tourtellotte, 634 Glen Ave., Westfield, N.J. 07090; John F. Villiers-Fisher, 2 Newman Drive, Kendall Park, N.J. 08824; and John S. Negra, 295 S. Plainfield Ave., Plainfield, N.J. 07080

Filed Oct. 6, 1971, Ser. No. 186,859
Int. Cl. B01j 9/04; F01n 3/14
U.S. Cl. 23—288 F 4 Claims



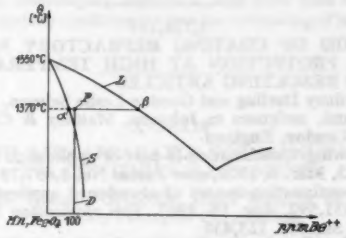
An apparatus for catalytically treating the exhaust gas from an engine, so as to eliminate noxious components and prevent air pollution. The apparatus features a tapered exhaust gas inlet pipe, which provides uniform distribution of exhaust gas to a cylindrical catalyst bed.

3,736,106

PROCESS FOR FLUX CRYSTALLIZING FERRITES, SPINELS AND GARNETS FROM 1% MELT MIXTURE

André Hamelin, Bellevue, Max Paulus, Paris, and Charles Guillaud, Bellevue, France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar)

Filed Apr. 3, 1969, Ser. No. 813,017
Claims priority, application France, Apr. 4, 1968, 147,034
Int. Cl. B01j 17/02
U.S. Cl. 23—300 9 Claims



To an initial material (mixture of 50% mol. Fe_2O_3 and 50% mol. MnO) a flux (for example $BaCO_3$) is added in sufficiently small proportion (85 p.p.m.) so that the liquid phase which appears, when the sample thus constituted is maintained at appropriate temperatures, is constituted by fine liquid films whose presence causes a discontinuous growth of the crystals (diameter of the crystals equal to 10^3–$10^4\mu$) and the formation of monocrystals, the sample remaining in the solid state.

3,736,107

COATED CEMENTED CARBIDE PRODUCT

Thomas E. Hale, Warren, Mich., assignor to General Electric Company

No Drawing. Filed May 26, 1971, Ser. No. 147,240
Int. Cl. B22f 7/00
U.S. Cl. 29—182.7 9 Claims

A high-strength, coated cemented carbide product comprising a cemented carbide substrate and a fully dense alpha aluminum oxide coating on the substrate. The coating has a thickness of from 1–20 microns and is firmly and adherently bonded to the cemented carbide substrate through a thin intermediate nonmetallic layer of an iron group metal aluminate. The coated product combines a wear resistance substantially as high as aluminum oxide cutting materials and a transverse rupture strength of at least 150,000 p.s.i. The coated product is prepared by passing water vapor, hydrogen gas and an aluminum halide over the substrate at a temperature of from 900°–1250° C., the ratio of water vapor to hydrogen gas being between about 0.025 and 2.0.

3,736,108

ARTICLES AND METHOD OF ELECTRODEPOSITING A DECORATIVE NICKEL/CHROMIUM COATING ON A METAL SUBSTRATE

Renzo Vaglio, Turin, Italy, assignor to A.I.C. Approvirgianamenti Industriali Chimici S.p.A., Turin, Italy

Continuation-in-part of Ser. No. 80,725, Oct. 14, 1970, abandoned. This application Feb. 1, 1972, Ser. No. 222,507
Claims priority, application Italy, Oct. 15, 1969, 874542 A/69
Int. Cl. C23b 5/50
U.S. Cl. 29—183.5 13 Claims

A method of electrodepositing a decorative nickel/chromium coating on a metal substrate, which comprises, as its essential step, before a final chromium plating step, electroplating on the substrate a nickel layer containing fine particles of a

solid, non-conductive material embedded therein. Improved results are achieved when the nickel layer is electroplated from an aqueous nickel-plating bath containing dispersed therein from 0.1 to 10.0 g/l of microcrystalline particles of a nickel compound, which is insoluble in the bath, selected from the group consisting of the compounds having the formula Ni_x $[M(CN)_yA_z]$ and compounds having the formula $Ni_x[M(SCN)_y$ wherein M is a transition metal, A is NO_2 or CO, z is 0 or 1, $y+z$ is the coordination number of the transition metal, and x is the number of nickel atoms saturating the valence of the complex portion of the nickel compound.

3,736,109

METHOD OF COATING REFRACTORY METALS FOR PROTECTION AT HIGH TEMPERATURES AND RESULTING ARTICLES

Alan Sydney Darling and Gordon Leslie Selman, London, England, assignors to Johnson, Matthey & Co., Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 16,943, Mar. 5, 1970, now Patent No. 3,657,784, which is a continuation-in-part of abandoned application Ser. No. 631,592, Apr. 18, 1967. This application Mar. 17, 1971, Ser. No. 125,430

Claims priority, application Great Britain, Mar. 20, 1970, 13,599/70

The portion of the term of the patent subsequent to Apr. 25, 1989, has been disclaimed

Int. Cl. B32b *15/04*; C03b *5/18*

U.S. Cl. 29—195 **19 Claims**

This specification describes an article for use at high temperature, for example in the glass industry, and comprises a refractory core made from niobium, tantalum, chromium, zirconium, vanadium, hafnium, rhenium or alloys thereof, a barrier layer of magnesia and a sheath of a platinum group metal or an alloy based on at least one metal of the platinum group. The oxides of the core metal or alloy are chosen to be less volatile than the oxides of molybdenum at operating temperatures within the range 1100° to 1500° C. A core may also be made from tungsten or molybdenum and in such a case the barrier layer may contain a small quantity of vitreous material, for example borosilicate glass.

3,736,110

MONO- AND DICRESYL PHOSPHATE AMINE RUST INHIBITORS

Ernest H. Owston, Jr., Corona, and Robert L. Dinsmore, Long Beach, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Filed June 24, 1969, Ser. No. 836,170

Int. Cl. C10l *1/26*

U.S. Cl. 44—56 **3 Claims**

A rust inhibitor synthesized by reacting cresylic acid with phosphorus pentoxide to form mono- and di-aryl acid phosphates which are then neutralized with an imidazoline, and a process for producing such rust inhibitors is described. The rust inhibitor is useful in gasolines, including gasolines containing t-butyl alcohol.

3,736,111

PROCESS AND APPARATUS FOR THE COMPLETE RECLAMATION OF VALUABLE PRODUCTS FROM SOLID WASTE

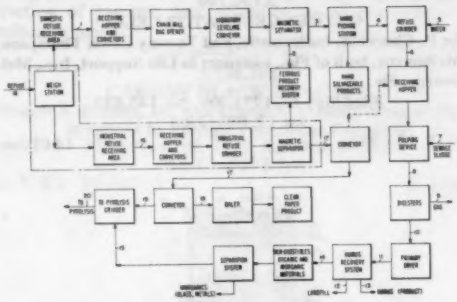
William H. Gardner, Newark, Del., and Donald H. Graham, Fort Ashby, W. Va., assignors to Hercules Incorporated, Wilmington, Del.

Filed May 17, 1971, Ser. No. 144,170

Int. Cl. C05f *9/00*; C10b *57/00*; C10j *3/00*

U.S. Cl. 48—111 **6 Claims**

A process for recovery of valuable products from domestic refuse is provided. Domestic refuse is subjected to aerobic digestion. A crude humus product containing non-digestible materials is recovered. The crude humus is separated into a humus product and non-digestible materials. The non-digestible materials are pyrolyzed to produce valuable oils and gases. Industrial refuse can be pyrolyzed



with the non-digestible material derived from domestic refuse.

3,736,112

HERBICIDAL COMPOSITIONS

Walter W. Abramitis, Downers Grove, Steven C. Ducey, Westmont, and James G. Atherton, Hoffman Estates, Ill., assignors to Akzona Incorporated, Asheville, N.C.

No Drawing. Continuation-in-part of application Ser. No. 645,614, June 13, 1967. This application Mar. 31, 1970, Ser. No. 24,376

Int. Cl. A01n *9/26*

U.S. Cl. 71—110 **15 Claims**

Herbicidal concentrate compositions containing carboxylic acid salts of amino ester of herbicidal acids and an organic solvent providing compositions having a high level of active herbicidal ingredient and water-in-oil emulsification properties.

3,736,113

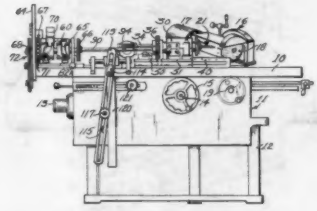
SPIRAL GRINDING RELIEVING MACHINE WITH TANDEM PLANETARY DIFFERENTIAL DRIVE

Walter Umbdenstock, Chicago, and Charles T. Breitenstein, Elk Grove Village, both of Ill., assignors to Spiral Step Stool Company, Elk Grove Village, Ill.

Continuation of Ser. No. 24,509, April 1, 1970, abandoned. This application Feb. 18, 1972, Ser. No. 227,377

Int. Cl. B24b *3/24*

U.S. Cl. 51—225 **12 Claims**



Spiral and radial relief grinding and backing off apparatus with improved headstock assembly capable of complex motion including simultaneous axial and radial displacements of a work spindle which is continuously rotated independently by a tandem planetary differential sine drive system operative to

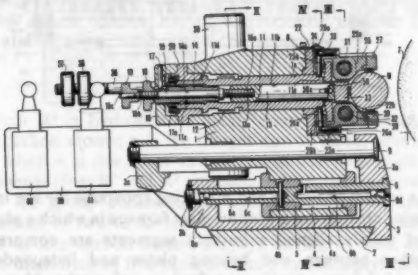
increase or reduce its speed as a selectable function of the linear travel of a machine carriage, traverse table, or the like, of which the headstock assembly and drive components are a structural part.

3,736,114

THREE POINT CONTACT STEADY REST

Takahiko Okada, Chiryu, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 6, 1971, Ser. No. 204,953
Int. Cl. B24b *41/06*
U.S. Cl. 51—238 S **7 Claims**



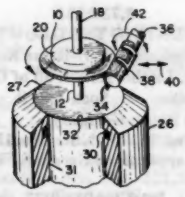
In a steady rest for supporting a workpiece of the type comprising upper, lower and side contact shoes adapted to engage the workpiece and means for simultaneously moving the contact shoes toward and away from the workpiece, there are provided a main body of the steady rest having a bore, a sleeve rotatably received in the bore, means provided for the main body for rotating the sleeve, a rest shaft slidably contained in the sleeve, means for mounting the side contact shoe on one end of the rest shaft, means responsive to the rotation of the sleeve for axially moving the rest shaft, an upper contact shoe supporting member pivotally mounted on the main body, a lower contact shoe supporting member pivotally mounted on the main body, and means responsive to the rotation of the sleeve for pivotally rotating the upper and lower contact shoe supporting members in the opposite directions whereby the upper, lower and side contact shoes are moved simultaneously toward and away from the workpiece by the rotation of the sleeve.

3,736,115

APPARATUS FOR AND METHOD OF EDGE MACHINING FLEXIBLE CONTACT LENSES

Raymond T. Blum, Pittsford, N.Y., assignor to Bausch & Lamb Incorporated, Rochester, N.Y.

Filed July 6, 1971, Ser. No. 160,016
Int. Cl. B24b *1/00, 7/00, 9/00*; B08b *7/00, 3/00*
U.S. Cl. 51—284 **4 Claims**



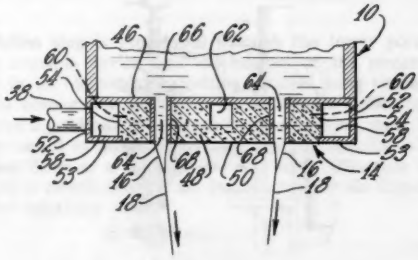
A machine for centering a hydrophilic lens between rotatable spindles to engage a polishing pad for contouring the edge of the lens comprises a rotatable spindle having an extensible sleeve concentrically disposed about it for raising to form a chamber for holding a fluid for floating and centering a hydrophilic lens. A clamping spindle is provided for engaging and moving the hydrophilic lens against the rotatable support spindle and to thereafter cooperatively spin the lens to displace fluids therefrom to condition the edge of the lens for contouring by engaging a slurry coated polishing pad. A novel method for preparing the hydrophilic lens for polishing comprises the steps of floating the lens on the fluid filled chamber, centering the lens concentrically with the support spindle axis, concentrically clamping the lens upon the spindle and rotating the spindle to centrifugally displace at least some fluid from the lens and thereby condition the lens for contouring of its edge.

3,736,116

METHOD AND APPARATUS FOR MANUFACTURING CONTINUOUS FILAMENTS

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation

Continuation of abandoned application Ser. No. 798,286, Feb. 11, 1969. This application July 20, 1971, Ser. No. 164,441
Int. Cl. C03b *37/02*
U.S. Cl. 65—2 **24 Claims**



Apparatus and method for making glass fibers such that molten glass flows to a passageway outlet located at the surface of a porous region and gaseous fluid is supplied under pressure to the porous region, the gaseous fluid being released from the surface of the porous region to promote separation of the molten glass from the surface.

3,736,117

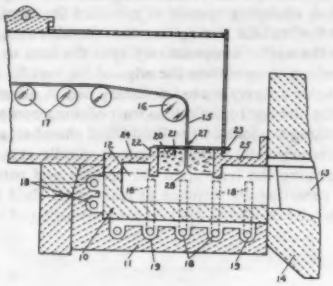
DRAWING SHEET GLASS FROM A MASS OF MOLTEN GLASS THROUGH A BODY OF PROTECTIVE MATERIAL

Donald W. Dunipace, Perrysburg; William E. McCown, Toledo, and Conrad B. Schafer, Maumee, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Continuation of Ser. No. 838,304, Sept. 4, 1959, abandoned. This application July 18, 1966, Ser. No. 566,086
Int. Cl. C03b *13/00, 5/32*
U.S. Cl. 65—32 **9 Claims**

Drawing sheet glass from a mass of molten glass through a body of protective material. The surface of the mass of molten glass from which the sheet is being formed is covered, and the surfaces of the newly formed sheet are surrounded by, a rela-

tively dense fluid to protect the sheet from adverse temperature and atmospheric conditions in this area. The fluid is inert



and non-injurious to the glass at the forming temperatures, and may be either a heavy gas or a light liquid.

3,736,118

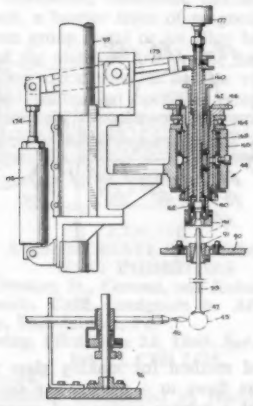
METHOD AND MEANS FOR FORMING A THERMOMETER BULB

Henry G. Heflich, Ridgefield, and Charles K. Krumm, Wyckoff, N.J., assignors to Kahle Engineering Co., Union City, N.J.

Filed Nov. 5, 1971, Ser. No. 196,097

Int. Cl. C03b *21/00*

U.S. Cl. 65—110 **13 Claims**



An improved method of manufacturing a thermometer bulb is disclosed together with an automatic machine for performing the new method. The invention covers the manufacture of a liquid thermometer of the usual type which consists of a hollow bulb for containing mercury or other liquid and an attached extending stem including a connected tunnel. The new method includes the formation of the hollow bulb and its connection to the stem capillary tunnel while insuring that there is no blockage between the bulb and the capillary tunnel during manufacture. The method first blows a hollow bubble in the bottom of the stem. Thereafter, this bubble is broken and reshaped to a flared section which is then welded to the upper portion of a hollow glass tube which is then cut and sealed to form the closed bulb. A rotary multi-positioned machine is provided with a number of stations which automatically and successively perform the above described steps.

3,736,119

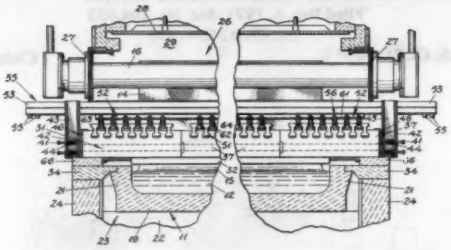
GLASS FURNACE LIP-TILE

Frank W. Irland, Shreveport, La., assignor to Libbey-Owen-Ford Company, Toledo, Ohio

Filed May 3, 1971, Ser. No. 139,637

Int. Cl. C03b *5/20*

U.S. Cl. 65—204 **9 Claims**



An improved lip-tile and mounting apparatus for use in the drawing chamber of a window glass furnace in which a plurality of axially aligned refractory segments are compressed together between end bearing plates and independently suspended from a continuous, fluid-cooled overhead beam. A recess provided along the bottom of the lip-tile contains an auxiliary radiant heating element. The rearward bottom edge of the lip-tile projects into a sealing member containing a body of loose granular material to thereby create an elongated seal between the pot chamber and the drawing chamber along the rear pot wall.

3,736,120

METHOD OF DISPOSING AND RECLAIMING SOLID REFUSE

Andre Tempe, P.O. Box 242, Budd Lake, N.J. 07828

Original application Aug. 4, 1970, Ser. No. 60,856. Divided and this application Mar. 2, 1971, Ser. No. 120,318

Int. Cl. C05f *11/08*

U.S. Cl. 71—9 **11 Claims**

This specification discloses a method of disposing of solid refuse and converting it into usable end products. Two basic groups of method steps are involved. One is the sorting of the refuse to segregate metals, carboard, cartons and papers; bottles and glass; cloth and rags; and plastics together with attending steps of treating the sorted components to reclaim them for usage. The second group of steps is the processing of the organic materials which remain after the above solids have been removed to convert it into usable organic fertilizer.

3,736,121

AGENT FOR STUNTING THE GROWTH OF PLANTS

Bernd Zech, Ludwigshafen; Karl-Heinz Koenig, Frankenthal, and Johann Jung, Limburgerhof, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Mar. 11, 1971, Ser. No. 123,382

Claims priority, application Germany, Apr. 1, 1970, P 20 15 416.9

Int. Cl. A01n *9/22*

U.S. Cl. 71—76 **4 Claims**

A process for stunting the growth of plants with substituted pyridazinium compounds.

3,736,122

METHOD OF CONTROLLING PLANT GROWTH

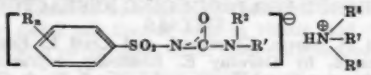
Ching C. Tung, 1 Stoneleigh Towers, St. Louis, Mo. 63132, and Philip C. Hamm, 51 Wingfield Road, Glendale, Mo. 63132

No Drawing. Continuation-in-part of application Ser. No. 406,884, Oct. 27, 1964. This application Apr. 10, 1969, Ser. No. 815,208

Int. Cl. A01m *9/14*

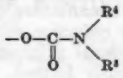
U.S. Cl. 71—103 16 Claims

Herbicidal use of compounds of the formula



wherein R is selected from the group consisting of chloro, bromo, iodo, cyano, alkyl having a maximum of four carbon atoms, alkoxy having a maximum of four carbon atoms, nitro, amino and the group

wherein R^3 is hydrogen or alkyl having a maximum of four carbon atoms; *n* is the integer one to three, provided that when *n* is one, R is substituted in the 4′-position of the phenyl ring; R′ and R^2 are each independently selected from the group consisting of hydrogen, alkyl having a maximum of twelve carbon atoms, alkoxy having a maximum of five carbon atoms, alkynyl having at least three and a maximum of five carbon atoms, cycloalkenyl having at least five and a maximum of seven carbon atoms, cycloalkyl having at least five and a maximum of seven carbon atoms, mono substituted cycloalkyl said substituent being alkyl having a maximum of four carbon atoms, phenyl, substituted phenyl having a maximum of three substituents said substituents being selected from the group consisting of alkyl having a maximum of four carbon atoms, bromine, chlorine, hydroxy, alkoxy having a maximum of four carbon atoms, trifluoromethyl, phenoxy, mono and dihalogenated phenoxy said halogen being chlorine or bromine and the group



said group being in the 3-position

wherein R^4 and R^5 are each independently selected from the group consisting of hydrogen and alkyl having a maximum of four carbon atoms; R^6, R^7 and R^8 are each independently selected from the group consisting of hydrogen, alkyl having a maximum of twelve carbon atoms, alkenyl having a maximum of six carbon atoms provided that the acetylenic linkage is not on the carbon attached to the nitrogen, hydroxyalkyl having a maximum of six carbon atoms, two of the groups R^5, R^6 and R^7 can be joined together to form an alkylene having four to seven carbon atoms, provided that when two of the groups R^5, R^6 and R^7 are joined together the remaining group is hydrogen, and further provided that the groups R^5, R^6 and R^7 are not all hydrogen.

3,736,123

HERBICIDAL CONTROL OF CRABGRASS

Angelo John Speziale, Creve Coeur, and Lowell R. Smith, Chesterfield, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Application Apr. 12, 1968, Ser. No. 721,062, now Patent No. 3,642,863, which is a continuation-in-part of application Ser. No. 454,209, May 7, 1965, now Patent No. 3,450,747, which in turn is a continuation-in-part of application Ser. No. 221,302, Sept. 4, 1962. Divided and this application Nov. 11, 1971, Ser. No. 197,954

Int. Cl. A01n *9/20*

U.S. Cl. 71—111 4 Claims

The growth of crabgrass is inhibited by applying to the soil compounds of the class of alkyl esters of N-(2-nitrobenzoyl) carbamic acid.

3,736,124

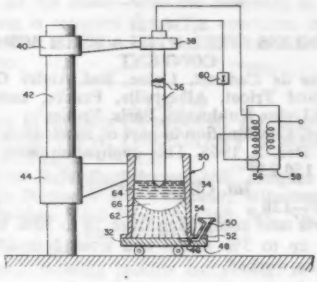
METHOD FOR ELECTROSLAG REMELTING OF METALS WITH SLAG INTRODUCTION

Boris Evgenievich Paton, Jury Vadimovich Latash, Boris Izrailevich Medovar, and July Georgievich Emelianenko, Kiev, and Mikhail Markovich Kljuev, Elektrosal, U.S.S.R., assignors to Institut Elektrosvarki Im. E. O. Patona, Kiev, U.S.S.R.

Continuation-in-part of applications Ser. No. 592,054, Nov. 4, 1966, Ser. No. 10,419, and Ser. No. 10,485, both Feb. 11, 1970, all now abandoned. Said Ser. Nos. 10,419 and 10,485 being a continuation-in-part of said application Ser. No. 592,054. This application Sept. 1, 1970, Ser. No. 68,661

Int. Cl. C22d *7/00*; H05b *7/18*; C21c *5/52*

U.S. Cl. 75—10 C 38 Claims



Molten slag is introduced through the lower portion of a crucible device into the bottom of the remelting zone in an electroslag remelting process using single or plural consumable electrodes in an amount sufficient to achieve a predetermined depth in the remelting zone. The achievement of the predetermined depth is signalled when current flows as a result of the slag level contacting and closing a circuit through an energized electrode disposed in the remelting zone.

3,736,125

TWO STAGE SELECTIVE LEACHING OF COPPER AND NICKEL FROM COMPLEX ORE

Thomas C. Wilder, Cambridge, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed July 16, 1970, Ser. No. 55,306

Int. Cl. C22b *3/00*; C21b *1/02, 3/00*

U.S. Cl. 75—21 4 Claims

Copper and nickel may be selectively leached from a complex ore containing manganese, iron, copper, nickel, cobalt and molybdenum by leaching a reduced ore with a solution of an ammonium salt in ammonium hydroxide at approximately room temperature to remove the copper values and then leaching the residue at a higher temperature to extract the nickel.

3,736,126

GOLD RECOVERY FROM AQUEOUS SOLUTIONS

James S. Fritz, Ames, and William G. Millen, Cedar Rapids, Iowa, assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Sept. 24, 1971, Ser. No. 183,659

Int. Cl. C22b *11/04*

U.S. Cl. 75—118 10 Claims

Gold is separated from an aqueous solution and from other metal ions in an aqueous solution by acidifying the solution and adding chloride ion to complex the gold ions

present, thus forming a feed solution, and passing the feed solution through an adsorption bed of a polymer of an acrylic or methacrylic ester which selectively adsorbs the gold ions while permitting other metal ions to pass through the bed.

3,736,127
METHOD OF TREATING AND HANDLING MOLTEN METAL

Friedrich Kocks, 1 Freiligrathstrasse, 4 Dusseldorf, Germany

No Drawing. Filed Mar. 2, 1971, Ser. No. 120,320
Claims priority, application Germany, Mar. 2, 1970, P 20 09 641.7
Int. Cl. C22b *9/00*
U.S. Cl. 75—93 R **9 Claims**

A process is provided for producing and casting metal melts in which ingots are cast one after another in chronological sequence at equally spaced time intervals corresponding to the individual cycle times for the next succeeding processing step such as rolling, forging or the like.

3,736,128
STAINLESS STEEL WITH A HIGH BORON CONTENT

Jean-Jacques de Cadenet, Ugine, and André Gueussier and Roland Tricot, Albertville, France, assignors to Pechiney Ugine Kuhlmann, Paris, France

No Drawing. Continuation-in-part of application Ser. No. 780,551, Dec. 2, 1968. This application June 4, 1971, Ser. No. 150,237
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 **3 Claims**

A stainless steel comprising from 20 to 30% by weight chromium, up to 5% nickel and from 2 to 6% boron which can be worked.

3,736,129
ALLOY STEEL

Bill N. Briggs, Santa Ana, Calif., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 13, 1971, Ser. No. 143,232
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 W **1 Claim**

Disclosed is a low carbon-low alloy content steel which is highly responsive to thermal-mechanical processing with air hardening capability. The steel is compatible process-wise with typical tool steels useful in the impact layer of armor. The alloy steel of this invention yields a high toughness material useful as the backing material for the impact layer of armor.

3,736,130
ALLOY

Frederick T. Wishnie, 2350 Pine St., Seaford, N.Y. 11783

No Drawing. Continuation of abandoned application Ser. No. 664,227, Aug. 2, 1967. This application Sept. 17, 1970, Ser. No. 73,074
Int. Cl. C22c *9/06*
U.S. Cl. 75—154 **4 Claims**

An alloy comprising the following constituents in the following range of percentages by weight: nickel 5 to 27%, castability promoting elements 1.2 to 8%, hardness promoting elements .5 to 9.5%, with the balance being copper.

3,736,131
FERRITIC-AUSTENITIC STAINLESS STEEL

Ronald H. Espy, Randallstown, Md., assignor to Armco Steel Corporation, Middletown, Ohio

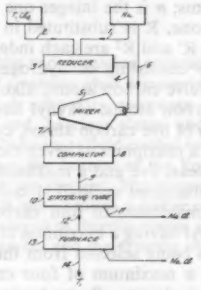
Filed Dec. 23, 1970, Ser. No. 101,096
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 B **12 Claims**

An austenitic-ferritic stainless steel consisting essentially of up to about 0.06 percent carbon, about 4.0 to less than 11.0 percent manganese, about 19 to about 24 percent chromium, about 0.12 to about 0.26 percent nitrogen, nickel up to about 3.0 percent, and remainder substantially iron except for incidental impurities. The austenite-ferrite balance, ranging between 10 percent and 50 percent austenite, is stable, and the steel exhibits high toughness, corrosion resistance and excellent weldability.

3,736,132
METHOD FOR PRODUCING REFRACTORY METALS

Harold H. Morse, Cincinnati, and Cecil L. Easterday, deceased, by Dorothy E. Easterday, representative, Washington Court House, and Layne S. Plock, Geneva, Ohio, and Fred K. Morgan, Cold Springs, Ky., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 17, 1971, Ser. No. 209,094
Int. Cl. B22f *1/00*; C22b *53/00, 61/02*
U.S. Cl. 75—200 **7 Claims**



A process for the manufacture of titanium from titanium tetrachloride by reduction with sodium, in which a partially reduced material principally corresponding to Na_2TiCl_4 is continuously formed, is improved by continuously mixing the partially reduced material with sodium at a temperature below about 200° C. so as to form an intermediate material corresponding to at least 15% by weight Na_3TiCl_4, compacting the intermediate material at a temperature of less than 100° C. to form a continuous rod of the composite material without substantial further reduction of the titanium chloride content thereof and continuously heating the rod formed at temperatures above 800° C. to complete reduction of the titanium chloride component thereof, to effect sintering of the resulting titanium metal, and to simultaneously melt the salt by-product and thereby facilitate separation and removal of the salt from the rod-shaped, sintered titanium metal product.

3,736,133
TRANSPARENT INK ABSORBENT LACQUERS

John W. Weigl, Webster, and Joseph Mammino and Alan R. Amidon, Penfield, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed June 21, 1971, Ser. No. 155,361
Int. Cl. G03g *5/02*; B41n *1/00*
U.S. Cl. 96—1.5 **5 Claims**

A method for forming ink absorbent transparenices is provided comprising applying a lacquer to a polymeric film transparency, said lacquer comprising a substantially transparent resinous binder pigmented with an ink absorptive pigment exhibiting substantially the same refractive index as that of the binder, and drying said lacquer on said transparency.

3,736,134

HUMIDITY RESISTANT PHOTOCONDUCTIVE COMPOSITIONS

Donald W. Gosselink, North St. Paul, Minn., and Einar D. Horne, Hudson, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 14, 1970, Ser. No. 80,567
Int. Cl. G03g 5/08
U.S. Cl. 96—1.8 17 Claims

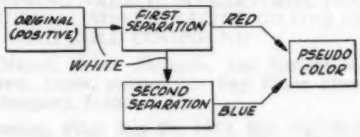
Improvement in the humidity resistance of photoconductive titanium dioxide containing electrographic elements is achieved by combining therewith a carboxylic acid or metal salt thereof such as abietic acid or zinc abietate with an inorganic metal oxide such as zinc oxide.

3,736,135

METHOD OF INCREASING IMAGE CONTRAST

Roy H. Stratton, Woodland Hills, Calif., assignor to The Rand Corporation, Santa Monica, Calif.

Filed Sept. 7, 1971, Ser. No. 178,092
Int. Cl. G03c 5/08, 7/00
U.S. Cl. 96—23 10 Claims



A method of increasing the visual contrast of photographs having various low contrast areas, such as X-ray plates, aerial photographs, etc. By this process, the various shades of grey are converted to various colors which can be more easily distinguished by the eye.

3,736,136

DYE DIFFUSION TRANSFER PROCESS FOR THE PRODUCTION OF POSITIVE COLOR PHOTOGRAPHIC IMAGES

Justus Danhauser and Paul Marx, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 30, 1971, Ser. No. 158,552
Claims priority, application Germany, July 2, 1970, P 20 32 711.1
Int. Cl. G03c 5/54, 7/00, 1/34
U.S. Cl. 96—3 12 Claims

Positive color photographic images are produced by a modified dye diffusion transfer process including exposure of a silver halide emulsion layer transfer of a diffusing development inhibiting substance from the exposed areas to an unexposed developable emulsion layer whereby development is inhibited by the said transferred development inhibiting substance and transfer of a dye from the said second emulsion layer which is split off from a non-diffusing dye-giving compound upon development, to an image-receiving element, whereby the non-diffusing dye-giving compound has the formula defined below.

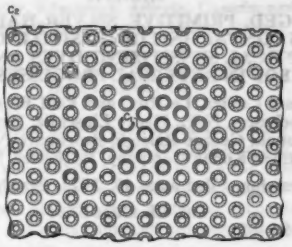
3,736,137

APERTURE MASK FOR, AND METHOD OF SCREENING, A COLOR CATHODE-RAY TUBE

Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 22, 1971, Ser. No. 191,653
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 4 Claims

The screen of a color cathode-ray tube is formed by means of a photographic method in which a photosensitive coating applied to the screen area is exposed through the apertures of a shadow mask. To obtain phosphor dots that are smaller in size than the apertures of the mask and larger in the center than at the edges of the screen, the mask apertures, which initially are of the same diameter, are temporarily closed down by the application of a removable coating having a thickness which increases



progressively with radial spacing from the center toward the edge of the mask. After the screening is completed, the coating is removed from the apertures, conditioning the mask for utilization as the color selection electrode of the tube.

3,736,138

PROCESS FOR TRANSFERRING IMAGES FROM A SURFACE TO A TEMPORARY SURFACE AND TO A FINAL SURFACE

Robert Paul Held, Englishtown, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 30, 1969, Ser. No. 837,902
Int. Cl. G03c 11/12
U.S. Cl. 96—28 7 Claims

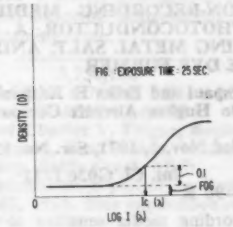
An image-forming process comprising, in order: (1) imagewise exposing photohardenable material to actinic radiation to harden the exposed areas only, (2) transferring the underexposed areas to a transfer sheet by applying pressure thereto at a temperature at which there is cohesive failure of the underexposed areas of the photohardenable material and adhesive failure at the release sheet-photohardened interface, and (3) pressure transferring the underexposed image from the pressure release sheet to a receptor.

3,736,139

HEAT AND LIGHT STABILIZATION OF PHOTOSENSITIVE ELEMENTS CONTAINING POLYHALOGENATED HYDROCARBONS, N-VINYLCARBAZOLES AND DIFURFURYLIDENE PENTAERYTHRITOLS

Hiroshi Yamashita, Nobuyoshi Sekikawa, and Hisatake Ono, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1971, Ser. No. 213,536
Claims priority, application Japan, Dec. 29, 1970, 46/121,450
Int. Cl. G03c 1/52, 5/24
U.S. Cl. 96—48 R 6 Claims



Photosensitive elements comprising a polyhalogenated hydrocarbon, N-vinylcarbazole and difurfurylidene pen-

taerythritol dispersed in a water soluble binder, and, if desired, a stabilizer and a sensitizer.

3,736,140

UNFOGGED, PRIMITIVE, SILVER HALIDE EMULSIONS CONTAINING DESENSITIZING AMOUNTS OF OPTICAL SENSITIZING DYES AND THE USE THEREOF IN REVERSAL PROCESSES

Susan Starr Collier, Le Roy, and Paul Brewster Gilman, Jr., Rochester, N.Y., Henry Linschitz, Waltham, Mass., and Ronald George Raleigh, Brockport, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 17, 1971, Ser. No. 154,154

Int. Cl. G03c 5/24

U.S. Cl. 96—64 **13 Claims**

Improved processes are disclosed for obtaining positive images in an unfogged, primitive, silver halide emulsion wherein a photographic element comprising a support and said emulsion are imagewise-exposed and then either (1) developed in a silver halide developer in the presence of a silver halide fogging agent or (2) given a high-intensity light flash before development in a silver halide developer. In one aspect, the silver halide emulsions of this invention are unfogged, primitive, silver halide emulsions which contain a desensitizing concentration of a spectral-sensitizing dye. In one preferred embodiment, the primitive silver halide emulsion containing a desensitizing level of a desensitizing dye is (1) imagewise-exposed, (2) given an over-all flash exposure with a relatively short-duration, high-intensity light and (3) developed in a silver halide developer.

3,736,141

PHOTOSOLUBILIZATION PROCESS USING CHEMICALLY SENSITIZED PHOTOSOLUBLE SILVER HALIDE LAYERS

Joseph D. Overman, New Shrewsbury, N.J., and Jack F. Strange, Rochester, N.Y., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 739,630, June 25, 1968, which is a continuation-in-part of application Ser. No. 689,331, Dec. 11, 1967. This application Aug. 2, 1971, Ser. No. 168,459

Int. Cl. G03c 5/24

U.S. Cl. 96—64 **9 Claims**

Process for increasing photographic speed by exposing a chemically or chemically plus dye sensitized photosoluble element and developing the resulting direct positive latent image to a silver halide direct positive image by treating in a silver halide solution in the presence of a reducing agent.

3,736,142

NUCLEATION-RECORDING MEDIUM COMPRISING A PHOTOCONDUCTOR, A NUCLEATION-ENHANCING METAL SALT, AND A PHTHALOCYANINE DYE FORMER

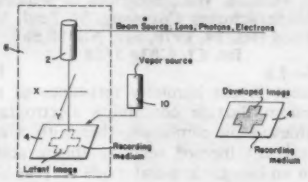
Alfred F. Kaspaul and Erika E. Kaspaul, Malibu, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

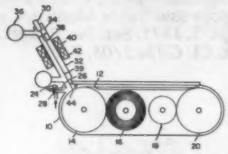
Filed Nov. 5, 1971, Ser. No. 196,170

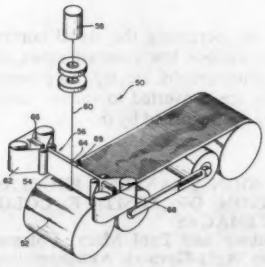
Int. Cl. G03c 1/52

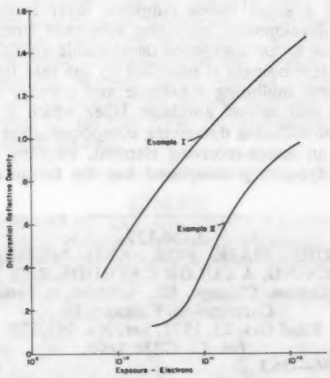
U.S. Cl. 96—90 R **1 Claim**

Image recording media sensitive to electron and/or photon exposure, and developable by metal deposit from a vapor, contains photon or electron sensitive material, nucleation-inducing compound and image density-enhancing and stabilizing additions such as phthalonitrile in a film-forming binder, which can act as a catalyst in the film-forming binder to promote imagewise formation of optically dense macrocyclic compounds thereon.









3,736,143

LIGHT-SENSITIVE DIAZONIUM COMPOUNDS AND DIAZOTYPE MATERIALS

Hans-Dieter Frommeld, Wiesbaden-Biebrich, Siegfried Scheler, Wiesbaden-Schierstein, and Arno Brauninger, Wiesbaden-Biebrich, Germany, assignors to Keuffel & Esser Company, Morristown, N.J.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,061
Claims priority, application Germany, Dec. 17, 1969, P 19 63 252.1
Int. Cl. G03c 1/54
U.S. Cl. 96—91 R 2 Claims

Diazotype material of increased light-sensitivity and rate of dye image development is obtained with an ortho-acylamino - meta - halo-para-amino benzene diazonium compound. One-component material capable of rapid neutral development may be prepared, as well as two-component material when utilizing couplers of lower activity.

3,736,144

PREPARATION OF PHOTOGRAPHIC EMULSION CONTAINING NARROW SIZE DISTRIBUTION OF OCTAHEDRAL SILVER HALIDE GRAINS SENSITIZED WITH GOLD COMPOUND

Tadashi Nagae, Takeo Shimada, and Keiichi Suzuki, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed July 20, 1970, Ser. No. 56,672
Claims priority, application Japan, July 18, 1969, 44/56,838
Int. Cl. G03c 1/28
U.S. Cl. 96—108 R 16 Claims

A process for preparing a silver halide photographic emulsion having a very narrow distribution of grain sizes and a reduced fog formation on being sensitized with a gold-containing chemical sensitizer comprising adding a water-soluble silver salt solution and a water-soluble alkali metal halide solution simultaneously and gradually to an aqueous solution of gelatin while maintaining the concentration of silver ion at a constant value within a range of 10^{-6} to 10^{-10} mol/liter, reducing the silver ion concentration to less than ½ the previous concentration used after adding 1/20 to ½ of the total silver salt, continuing the addition at this concentration, rinsing the emulsion free of water-soluble salts, and chemically sensitizing the emulsion with a chemical sensitizer containing at least a gold compound is disclosed. Photographic elements containing the silver halide emulsion are also disclosed.

3,736,145

LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL HAVING EXCEPTIONALLY HIGH RESOLVING POWER

Akira Hirata, 27–12, 5-chome, Kugayama, Suginami-ku; and Akio Kobayashi, 5–2, 6-chome, Tamadaira, Hinoshi, both of Tokyo, Japan; Eiichi Sakamoto, 12, 5-chome, Hon-machi, Hanno-shi, Hanno, Japan; and Shizuo Saito, 1400 Ohwada-cho, Hachioji-shi, Tokyo, Japan

No Drawing. Filed Nov. 13, 1970, Ser. No. 69,174
Claims priority, application Japan, Nov. 25, 1969, 44/94,229
Int. Cl. G03c 1/22
U.S. Cl. 96—140 7 Claims

A photographic emulsion orthomatically spectral-sensitized by addition of a dimethine merocyanine dye to an ultramicrofine silver iodobromide emulsion of less than 0.1 micron in particle diameter is increased in gamma without being lowered in speed thus resulting in an image free from blur due to radiation and extremely high in acutance.

3,736,146

RUMINANT FEED OF UREA-FURFURAL REACTION PRODUCT

Larry P. Milligan; Alexander R. Robblee, both of Edmonton, Alberta, Canada; John C. Wood, Piedmont, Calif., and Sujit K. Chakrabartty, Edmonton, Alberta, Canada, assignors to Canadian Patents & Development Limited, Ottawa, Ontario, Canada

Filed May 7, 1970, Ser. No. 35,577
Int. Cl. A23k 1/00
U.S. Cl. 99—2 ND 9 Claims

A reaction product of urea and furfural containing about 21 to 26 percent by wt. nitrogen has been prepared and found to be an efficient non-protein nitrogen source for animals particularly ruminants. A reaction product having about 3 moles of urea with two of furfural is preferred. The nitrogen is released slowly and gives enhanced nitrogen retention in the animal without toxicity.

3,736,147

PROCESS FOR PREPARING PROTEIN PRODUCTS

Guillermo Arturo Iacobucci, Dirck van Buren Myers, and Kazuyoshi Okubo, Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga., and Kikkoman Shoyu Co., Ltd., Tokyo, Japan, fractional part interest to each

Filed Apr. 5, 1971, Ser. No. 131,328
Int. Cl. A23j 1/14
U.S. Cl. 99—17 14 Claims

A process is provided for preparing plant protein products having low phytic acid content by subjecting protein isolates to ultrafiltration in the presence of a suitable chemical reagent.

3,736,148

MEAT FOOD ANALOGS RESISTANT TO MICROBIAL SPOILAGE

Morris H. Katz, St. Louis Park, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.

No Drawing. Filed June 28, 1971, Ser. No. 157,685
Int. Cl. A23l 3/34, 1/34
U.S. Cl. 99—17 10 Claims

Meat food analogs which are resistant to microbial spoilage are comprised of vegetable protein, water, food solids other than vegetable protein dissolved or colloidally dispersed in the water to reduce the water activity (a_w) of the analogs to below 0.95, and sufficient acid to adjust the pH to between 3.0 and 5.4. The meat food analogs are analogous in texture, taste and apparent moist eating quality to freshly cooked, meat-type foods having a water content of over 55% and an a_w of more than 0.98.

3,736,149

STABILIZED FLAVORING COMPOSITIONS

William A. Knapp, Matawan, N.J., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,244
Int. Cl. A23l 1/00, 1/04, 1/20
U.S. Cl. 99—78 13 Claims

Stabilized flavoring compositions comprising a flavoring agent fixed in a matrix material comprising lactose, hydrocolloid gum and a starch hydrolysate. Processes for preparing stabilized flavoring compositions and dry-mix food products containing same.

3,736,150

BEVERAGE CONTAINING EGG ALBUMEN AND AMINO ACID

Jude A. Basso and Charles V. Fulger, Battle Creek, and Joseph J. Thompson, East Jordan, Mich., assignors to Kellogg Company, Battle Creek, Mich.

No Drawing. Continuation-in-part of application Ser. No. 801,141, Feb. 20, 1969. This application Aug. 4, 1971, Ser. No. 169,067
Int. Cl. A23l 1/00
U.S. Cl. 99—78 7 Claims

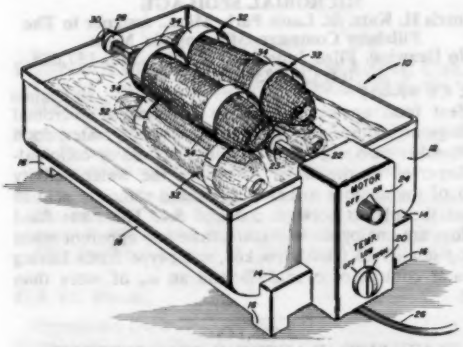
Egg albumen and an amino acid, such as glycine, are combined in the form of a water soluble powder. The

powder is combined with other ingredients such as food acid, flavoring, and sweeteners to form a dry beverage mix in which the egg albumen and glycine are present as the major sources of protein. The proteinaceous beverage produced by hydrating the mix does not possess the characteristic egg flavor and odor of the albumen.

3,736,151
DUST-FREE LEAVENING AGENT
Leo B. Post, New City, and Herbert J. Rosen, Yonkers, N.Y., and J. Howard Zeh, Houston, Tex., assignors to Stauffer Chemical Company, New York, N.Y.
No Drawing. Filed Jan. 6, 1970, Ser. No. 1,022
Int. Cl. A21d 2/02
U.S. Cl. 99—95 **20 Claims**

A novel dust-free leavening agent is provided containing sodium aluminum phosphate and a binder which comprises a non-toxic salt capable of forming a hydrate. Illustrative of the salts used as binders are dialkali phosphates, or alkali acid pyrophosphates, and more specifically, disodium phosphate, sodium acid pyrophosphate, aluminum sulfate or sodium aluminum sulfate. The novel leavening agent is substantially dust-free and is useful, for example, in self-rising flours.

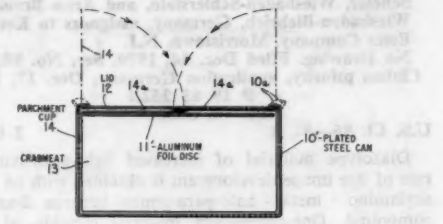
3,736,152
METHOD OF BUTTERING CORN EARS
David Turner, 410 NE. 22nd St., Fort Lauderdale, Fla. 33305
Continuation of application Ser. No. 11,593, Feb. 16, 1970. This application Mar. 13, 1972, Ser. No. 234,356
Int. Cl. A23i 1/00
U.S. Cl. 99—100 R **1 Claim**



A method of buttering corn ears wherein a container is provided having heated water with melted butter floating on the surface thereof. The corn ears are inserted in each of a plurality of pairs of ring supports mounted on a rotatable shaft disposed across the top of the container. The shaft is then rotated whereby the corn ears are successively immersed in and withdrawn from the fluid butter and each corn ear is caused to rotate about its own axis while being passed through the fluid butter.

3,736,153
PROCESSING OF SEAFOOD INCLUDING SHELLFISH AND CRUSTACEANS
Dan S. Spears, Columbia, S.C., assignor to The Blue Channel Corp., Port Royal, S.C.
Filed June 11, 1970, Ser. No. 45,443
Int. Cl. A23b 3/00
U.S. Cl. 99—188 **1 Claim**

A package containing seafood products in a processing liquid containing copper or iron ions and the like, includes a metallic can containing the seafood covered within the can with aluminum foil and the like, said package having

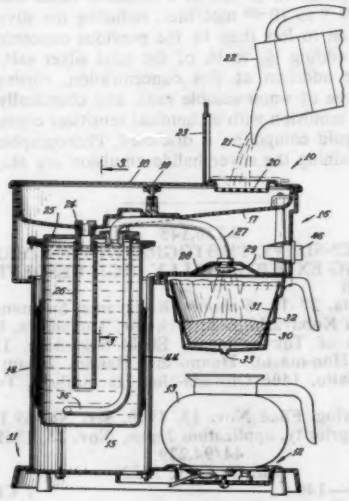


been processed by subjecting the can and its contents to elevated temperature.

3,736,154
PREVENTION OF FREEZE-DAMAGE IN PERISHABLE FOODS
Bernard J. Finkle, Kensington, Calif., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed June 28, 1971, Ser. No. 157,760
Int. Cl. A23b 7/04
U.S. Cl. 99—193 **1 Claim**

Freeze-damage in perishable comestibles is substantially reduced by an ultra-slow cooling process.

3,736,155
COLD WATER POUR-IN BEVERAGE MAKER WITH BLANKET HEATER AND DIMETALLIC THERMOSTAT
John C. Martin, Springfield, Ill., assignor to Bunn-O-Matic Corporation, Springfield, Ill.
Filed May 15, 1972, Ser. No. 253,556
Int. Cl. A47j 31/00
U.S. Cl. 99—282 **5 Claims**



Water is heated in a tank under the control of a bimetallic thermostat which has a wide temperature operating range. Normal heat loss is made up by a blanket heater that maintains the water at a temperature intermediate the range of the bimetallic thermostat.

3,736,156
ELECTROLESS COPPER PLATING

Frank E. Stone, Trumbull, and Edward B. Saubestre, Hamden, Conn., assignors to Enthone, Incorporated, New Haven County, Conn.

No Drawing. Continuation-in-part of application Ser. No. 62,649, Aug. 10, 1970. This application Feb. 4, 1972, Ser. No. 223,690
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 8 Claims

No bail-out, formaldehyde odor-reducing or eliminating method for replenishing depleted or spent electroless copper plating baths which eliminates the prior requirement of removing or bailing out material amounts of liquid solution from the bath during replenishing to maintain constant volume, and which considerably reduces or eliminates the irritating ordor of formaldehyde otherwise emanating from the bath. A replenisher concentrate solution is added to the depleted electroless copper plating bath, such replenisher concentrate solution containing the following constituents within the proportion ranges set forth below:

	Percent by weight
Cupric nitrate	About 1 to saturation.
Formaldehyde - methanol reaction product comprising primarily $CH_3—O—CH_2—O—CH_3$	About 1–50.
Formalin	About 15–75.
Methanol, concentrated	About 1–83.

The formaldehyde-methanol reaction product comprising primarily the pleasant smelling methylal, i.e.

$$CH_3—O—CH_2—O—CH_3,$$

is present in the replenisher concentrate solution within the aforesaid proportion range in an effective amount, sufficient to reduce considerably the formaldehyde odor of the electroless copper plating bath.

3,736,157
ELECTROLESS COPPER TIN PLATING SOLUTION AND PROCESS

Kenneth J. Hacias, Sterling Heights, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,485
Int. Cl. C23c *3/00*
U.S. Cl. 106—1 10 Claims

An aqueous acidic composition useful for forming a copper tin coating on a ferrous metal surface without the application of electric current, which comprises copper ions in the range of from about 0.01 to 30% by weight calculated as $CuSO_4 \cdot 5H_2O$, tin ions within the range of about 0.01 to 30% by weight calculated as $SnSO_4$ and a long chain aliphatic amine in the range of about 0.01 to 10% by weight.

3,736,158
CZOCHRALSKI-GROWN SPINEL FOR USE AS EPITAXIAL SILICON SUBSTRATE

Glenn Wherry Cullen, Princeton, and Stephen Ray Bolin, Hightstown, N.J., Andrew David Morrison, Winchester, Mass., and Chih Chun Wang, Hightstown, N.J., assignors to RCA Corporation

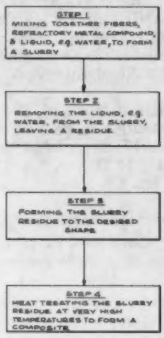
Filed Mar. 19, 1971, Ser. No. 126,113
Int. Cl. C04b *35/44*
U.S. Cl. 106—42 2 Claims

An improved single-crystal magnesium aluminate spinel is grown from alumina-rich melts so that the resulting spinel crystal displays a single lattice constant. This material exhibits superior qualities for use as an epitaxial silicon substrate, especially in view of its chemical stability. A method is given for producing these improved spinel crystals by an adaptation of the Czochralski method such that crystals can be prepared from nonstoichiometric melts.

3,736,159
COMPOSITES HAVING LOW THERMAL EXPANSION

James O. Gibson and Robert L. Schumacher, Richland, and Kay L. Myler, Benton City, Wash., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 2, 1970, Ser. No. 15,526
Int. Cl. C04b *35/54*
U.S. Cl. 106—56 22 Claims


STEP 1
MIXING TOGETHER FIBERS, REFRACTORY METAL COMPOUND, & LIQUID, EG WATER, TO FORM A SLURRY
STEP 2
REMOVING THE LIQUID, EG WATER, FROM THE SLURRY, LEAVING A RESIDUE
STEP 3
FORMING THE SLURRY RESIDUE TO THE DESIRED SHAPE
STEP 4
HEAT TREATING THE SLURRY RESIDUE AT VERY HIGH TEMPERATURES TO FORM A COMPOSITE

Process wherein short lengths of fibers, e.g. graphite fibers, extremely small particles of a refractory metal compound, e.g. NbC of 0.02 micron particle size, and liquid, e.g. water, to make a slurry, are thoroughly mixed together, the liquid e.g. water is then removed from the slurry, leaving a slurry residue which can be formed to the desired shape as by pressing and finally heat treated at very high temperatures, e.g. 3000° C., to form a composite with fibres, e.g. graphite fibers, dispersed in a matrix of refractory metal compound, e.g. NbC. A composite produced by the above process.

3,736,160
FIBROUS ZIRCONIA CEMENT COMPOSITES

Bernard H. Hamling, Warwick, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 700,031, Jan. 24, 1968, and Ser. No. 717,367, Mar. 29, 1968. This application May 11, 1970, Ser. No. 36,410
Int. Cl. C04b *35/48*
U.S. Cl. 106—57 24 Claims

Composites comprising fibrous zirconia in a matrix of zirconia are prepared by subjecting fibrous zirconia impregnated with a mixture of a liquid containing a zirconium compound and a refractory powder to a temperature sufficient to insure conversion of substantially all of the zirconium compound to zirconia. The composites are useful as heat shields, insulation and the like.

3,736,161
PRODUCTION METHODS FOR DOLOMITE-MAGNESITE REFRACTORY MATERIAL

Ronald Staut and Joseph L. Stein, Cherry Hill, N.J., assignors to General Refractories Company, Philadelphia, Pa.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,205
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 9 Claims

A light burned, low flux dolomite is partially hydrated and a magnesium-containing compound that decomposes to form MgO, or light-burned magnesium oxide, is admixed with the partially hydrated dolomite to produce a composition that contains 45–98% by weight magnesium

oxide after firing. Subsequently, the partially hydrated admixture is fired to produce a dense refractory grain possessing improved hydration resistance. Preferred results occur when the composition contains over 50% by volume of magnesium oxide after firing, because at these MgO levels, the fired grain tends to exhibit a continuous magnesium oxide matrix.

3,736,162
CEMENTS CONTAINING MINERAL FIBERS OF HIGH CORROSION RESISTANCE

Vaclav Chvalovsky, Prague, and Lumir Mach and Helena Machova, Ostrava, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved., Prague, Czechoslovakia

No Drawing. Application Sept. 26, 1969, Ser. No. 861,471, which is a continuation-in-part of abandoned application Ser. No. 762,615, Sept. 25, 1968. Divided and this application Feb. 10, 1972, Ser. No. 225,323
Int. Cl. C04b *7/02*
U.S. Cl. 106—99 **6 Claims**

Mineral fibers of high corrosion resistance are made by employing a base material or composition containing a plurality of oxides of metals from at least one of the groups II, III, IV and VIII of the Periodic Table; adjusting the base raw material or composition so as to furthermore include TiO_2 in an amount of at least 1.5% by weight of the total composition and at least one oxide of a metal from the group II or IV*a* in an amount of at least 2.5% by weight of the total composition; melting the said raw material or composition; spinning the molten mass into fibers and then coating the thus-formed fibers with a polysiloxane resin. The fibers are particularly suited for incorporation in a cement medium where they may totally or partially replace asbestos fibers previously used for this purpose.

3,736,163
FIBER REENFORCED INSULATING SEGMENTS

Harry P. Hoopes, Berkeley, and Horst L. Weber, Walnut Creek, Calif., assignors to Fibreboard Corporation, San Francisco, Calif.

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,072
Int. Cl. C04b *15/06*
U.S. Cl. 106—120 **1 Claim**

Molded segments of lightweight high temperature calcium silicate insulating material are reenforced by use of nodulated mineral wool fibers in place of conventional asbestos fibers.

3,736,164
ORGANOPHOBIC AND HYDROPHOBIC SURFACE COATINGS

Melville Willard Uffner, Media, Pa., assignor to Air Products & Chemicals, Inc., Allentown, Pa.

No Drawing. Filed July 16, 1971, Ser. No. 163,417
Int. Cl. C08b *25/02*
U.S. Cl. 106—213 **15 Claims**

Surface coating compositions comprising a blend of an active fluorine-containing phosphate material, a chelating agent and a solvent, and the use of such surface coating compositions in providing oil, grease and solvent resistance to treated cellulosic materials are disclosed.

3,736,165
METHOD FOR PROCESSING KAOLIN CLAY

Edgar W. Sawyer, Jr., Edison, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge Township, N.J.

No Drawing. Filed July 21, 1971, Ser. No. 164,945
Int. Cl. C09c *3/02*; B03d *3/00*
U.S. Cl. 106—288 B **1 Claim**

In the wet processing of kaolin clay, the clay crude is initially defluocculated (dispersed) with a salt of a polymeric carboxylic acid as the primary diepersant. The deflocculated clay then undergoes further processing, e.g., fractionation, floccing, bleaching, filtration, rinsing and re-deflocculation. The preferred floccing agent is aluminum sulfate.

3,736,166
HEAT REACTIVE TRANSPARENT COPY SHEET

William R. Lawton, Salem, N.H., assignor to Arkwright-Interlaken, Inc., Fiskeville, R.I.

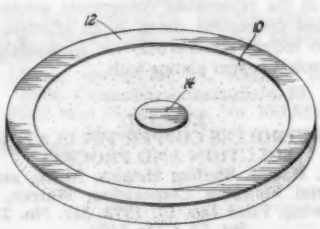
No Drawing. Filed Apr. 7, 1971, Ser. No. 132,207
Int. Cl. B41m *5/18*
U.S. Cl. 117—36.8 **7 Claims**

A transparent copy sheet capable of acquiring a stable color in selected regions contrasting with the background color of the sheet upon exposing these regions to an elevated temperature, comprising a transparent substrate and a coating comprising (1) ninhydrin; (2) an organic amino compound containing at least one amino group selected from the class consisting of primary and secondary amines, and which is normally reactive with ninhydrin at temperatures below this elevated temperature to form a dye; and (3) a selected substituted urea or thiourea stabilizer.

3,736,167
ELECTROLESS NICKEL PLATING PROCESS

James L. Bachman and Robert M. Martin, Golden, Colo., assignors to Coors Porcelain Company, Golden, Colo.

Filed Apr. 1, 1971, Ser. No. 130,132
Int. Cl. B44d *1/20*
U.S. Cl. 117—37 R **5 Claims**



A method for nickel plating ceramic parts having refractory-metalized areas wherein a thin, possibly discontinuous, coating of nickel is placed on the part by burnishing or tumbling. Thereafter, the part is electrolessly plated with a eutectic nickel-phosphorous composition. The coated parts are heated until the composition melts and runs off of only the ceramic, having the refractory-metalized areas uniformly nickel plated regardless of area.

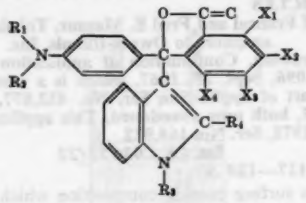
3,736,168
PRESSURE-SENSITIVE PHTHALIDE COMPOUND COPYING PAPERS

Minoru Ozutsumi, Yoshihide Miyazawa, Katsuiti Motohashi, and Satoshi Ogawa, Tokyo, and Shizuo Mishima, Shizuoka, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, and Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed May 17, 1971, Ser. No. 144,402
Claims priority, application Japan, May 15, 1970, 45/40,954; June 17, 1970, 45/51,888
Int. Cl. B41m *5/16*; C07d *27/00*
U.S. Cl. 117—36.2 **2 Claims**

A pressure-sensitive transferring sheet, adapted for use with another sheet having an electron accepting layer, comprising a support having thereon a pressure-rupturable microcapsule layer, said microcapsule containing an oil

having dissolved therein as a color former at least one phthalide compound represented by the following general formula



wherein X_1, X_2, X_3, X_4, R_1, R_2, R_3 and R_4 are described hereinafter, is disclosed.

3,736,169

PYROLYTIC DEPOSITION PROCESS FOR APPLYING A MULTI-LAYER COATING TO A NUCLEAR FUEL KERNEL

Leslie Wilfred Graham, Wimborne, Eric Handley Voice, Weymouth, and Heinz Ulrich Brinkmann, Dorchester, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Nov. 5, 1970, Ser. No. 87,348
Claims priority, application Great Britain, Nov. 5, 1969, 54,350/69
Int. Cl. G21c *3/06*
U.S. Cl. 117—46 CG **10 Claims**

A pyrolytic deposition process for applying a multilayer coating to a nuclear fuel kernel, at least one of the layers being a metal carbide. The optimum temperature range for deposition of the metal carbide is determined and the other layers are deposited pyrolytically at a temperature within this range.

3,736,170

PROCESS FOR IMPROVED ADHESION OF ELECTROLESS COPPER TO A POLYIMIDE SURFACE

John C. Lo, Endwell, and Michael T. Orinik, Binghamton, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed June 28, 1971, Ser. No. 157,626
Int. Cl. B44d *1/092;* **C23b** *5/64*
U.S. Cl. 117—47 A **9 Claims**

A polyimide surface is prepared for metal plating by immersion in a quaternary ammonium hydroxide compound solution such as, benzyl trimethyl ammonium hydroxide, tetramethyl ammonium hydroxide, tetraethyl ammonium hydroxide and the like The resultant hydrolyed sulface is activated by immersion in a solution of high fluoride ion concentration such as, KF, NaF, or HF and thereafter immersed in an electroless deposition bath for metal plating thereon. The reusltant metal film is found to be strongly bonded to the polyimide surface.

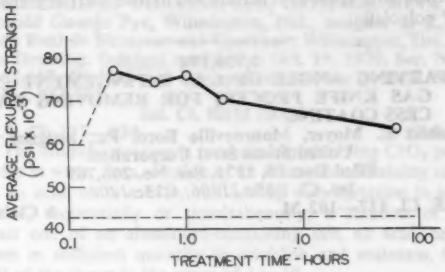
3,736,171

METHOD OF STRENGTHENING CERAMICS USING ION EXCHANGE

Henry P. Kirchner, 700 S. Sparks St., State College, Pa., and Dennis R. Platts, Boalsburg, Pa.; said Platts assignor to said Kirchner

Filed June 19, 1969, Ser. No. 834,729
Int. Cl. B44d *1/44;* **C04b** *41/06*
U.S. Cl. 117—62 **9 Claims**

A method of strengthening a body of alumina, having a glaze coating on at least one surface thereof, the glaze coating containing replaceable alkali metal ions taken from the group consisting of sodium and lithium and said glaze coating having approximately the same coefficient of expansion as that of the alumina of the body, said method comprising contacting the glaze coating with a material which is a source of replacement alkali ions taken from the group consisting of potassium and sodium, which replacement ions are larger than the replaceable ions in the glaze coating replaced and which will exchange with the replaceable ions in the glaze coating, and supplying heat to the contacted glaze coating and replacement ion source material at a temperature and for a time less than are necessary for relaxing the glaze for carrying out the ion exchange.



3,736,172

METHOD TO PREVENT CONDENSATE ACCUMULATION ON A SURFACE

Richard Delano, Box 96 11785, and Chad J. Raseman, 15 Blueberry Ridge Road 11733, both of Setauket, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 827,069, May 22, 1969. This application Aug. 23, 1971, Ser. No. 174,235
Int. Cl. B32b *27/06*
U.S. Cl. 117—95 **8 Claims**

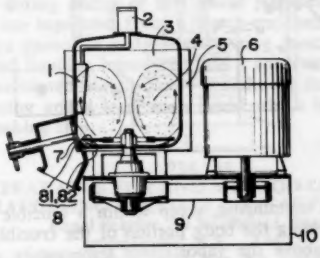
The interior surface of a plastic enclosure having therein a high humidity, such as a plastic greenhouse or pool enclosure, is coated to prevent dripping of condensate. The method consists of coating the interior surface with a dilute aqueous dispersion of a surfactant and colloidal alumina.

3,736,173

METHOD OF PREPARING CURABLE POLYOLEFIN GRANULES CONTAINING A CROSS-LINKING AGENT

Masaaki Okada, Hayashi Takemori, Toshio Kita, Toshiaki Nakai, Masaaki Ohtsuji, Yasuhiro Fujiwara, Shoji Tamura, and Kozo Morita, Amagasaki, Japan, assignors to Dainichi-Nippon Cables, Ltd., Amagasaki-shi, Japan

Continuation of abandoned application Ser. No. 769,048, Oct. 21, 1968. This application Jan. 18, 1971, Ser. No. 107,574
Claims priority, application Japan, Oct. 20, 1967, 42/67,577
Int. Cl. B32b *27/26, 27/32*
U.S. Cl. 117—100 C **8 Claims**



A method of preparing curable polyolefin granules comprising stirring polyolefin granules and a crosslinking agent

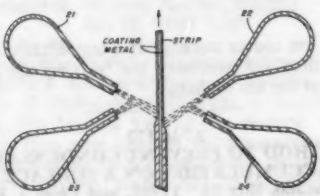
in a high speed stirring apparatus to locally fuse the surfaces of the polyolefin granules by the friction and collision of polyolefin granules, while preventing cohesion of the polyolefin granules with each other, and to cause the crosslinking agent to penetrate and diffuse into the granules of polyolefin.

3,736,174

VARYING ANGLE OF GAS IMPINGEMENT IN GAS KNIFE PROCESS FOR REMOVING EXCESS COATING

Robert C. Moyer, Monroeville Boro, Pa., assignor to United States Steel Corporation

Filed Dec. 16, 1971, Ser. No. 208,709
Int. Cl. B05c *11/06;* C23c *1/00*
U.S. Cl. 117—102 M **6 Claims**



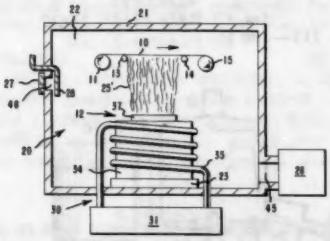
In the gas knife process for controlling the weight of an applied coating, the angle of gas impingement on the strand is varied, by employing at least two thin gaseous streams which are caused to impinge upon each other, prior to striking the strand. The resultant jet (analogous to the resultant vector of several forces acting on a particular body) is then employed to act as a gaseous barrier to excess liquid on the strand. The angle of impingement of the resultant jet is easily manipulated by varying the ratio of the flow rates of the individual gaseous streams.

3,736,175

VACUUM COATING METHOD

John T. Carleton, Upper Arlington, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of abandoned application Ser. No. 98,824, Dec. 16, 1970. This application June 2, 1972, Ser. No. 259,116
Int. Cl. C23c *17/02*
U.S. Cl. 117—107.1 **1 Claim**



In vacuum metallizing, creep within a crucible is inhibited by heating the body portion of the crucible to a temperature above the vaporization temperature of the metal coating stuff while heating a vertically extending lip portion of the crucible to a temperature which is below said vaporization temperature but above the melting point temperature of said metal coating stuff.

3,736,176

COMPOSITION, ARTICLES PREPARED THEREFROM AND METHOD OF PREPARING SUCH ARTICLES

Josef Francel and Fred E. Mansur, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Continuation of application Ser. No. 671,096, Sept. 27, 1967, which is a continuation-in-part of application Ser. No. 432,877, Feb. 15, 1965, both now abandoned. This application July 21, 1971, Ser. No. 164,922
Int. Cl. C03c *17/22*
U.S. Cl. 117—124 A **17 Claims**

A glass surface coating composition which when heat-fused on a glass surface provides the glass surface with a protective scratch resistant and optically transparent coating in addition to providing anti-glare and high optical resolution characteristics. The coated glass surface is produced by a method comprising the steps of heat-bonding onto the glass surface an aqueous composition consisting essentially of the following constituents in the indicated range of percent by weight:

Constituents:	Percentage by weight
Phosphoric acid	2–23
Aluminum phosphate	5–41

together with other beneficial constituents in the following indicated range of percentage by weight:

Constituents:	Percentage by weight
Sodium phosphate	0–30
Ammonium phosphate	0–10
Aniline phosphate	0–7
Magnesium oxide, carbonate or nitrate	0–7
Zinc oxide, carbonate or nitrate	0–7
Aluminum halide	0–7
Iron halide	0–7
Total other beneficial constituents	≥1

3,736,177

WATER AND OIL-RESISTANT, ANTISTATIC AND ABRASION-RESISTANT FINISH FOR NYLON FABRICS

Norman S. Buchan, Chelmsford, and Gil M. Dias, Fall River, Mass., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 12, 1971, Ser. No. 143,184
Int. Cl. B32b *27/06;* C09j *3/16*
U.S. Cl. 117—138.8 N **6 Claims**

A water and oil-resistant, antistatic and abrasion-resistant finish is imparted to a nylon fabric, said nylon prepared from hexamethylenediamine and adipic acid or its derivatives, by applying an aqueous emulsion containing a long chain aliphatic isocyanate, an organic fluoropolymer, and a reaction product of a water soluble polyamine having polyalkylene oxide groups and an epoxide or halohydrin compound and curing said composition on the nylon fabric at temperatures in excess of 300° F.

3,736,178

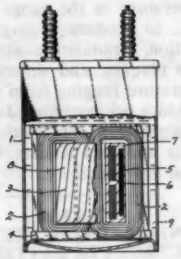
CELLULOSE MATERIAL TREATED WITH A CELLULOSE DERIVATIVE, DIGLYCOLAMINE AND AN ALKYLKETENE DIMER

Fred S. Sadler, Racine, Wis., and Frank W. Heinrichs, McMurray, Pa., assignors to McGraw-Edison Company, Milwaukee, Wis.

Filed Jan. 14, 1971, Ser. No. 106,506
Int. Cl. D21h *1/42*
U.S. Cl. 117—157 **2 Claims**

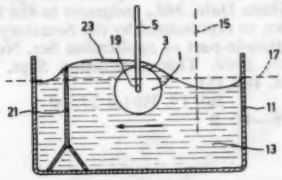
Cellulose material having improved physical properties and having particular application as insulation in electrical apparatus. The cellulose material, such as 100% Kraft fiber paper, is treated with a combination of a cellulose derivative, diglycolamine and an alkylketene dimer.

The treatment with this combination of ingredients improves the thermal stability of the cellulose material with



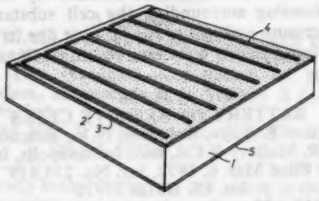
significantly lower dielectric loss characteristics, as well as improving the mechanical properties of the material.

3,736,179
DIP LACQUERING OF ELECTRICAL COMPONENTS
Nico Arie de Gier and Simon van der Kooij, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed May 10, 1971, Ser. No. 141,479
Claims priority, application Netherlands, May 15, 1970, 7007041
Int. Cl. B44d *1/06;* C23c *9/00*
U.S. Cl. 117—201 **3 Claims**



Method of providing a cylindrical electrical component having radial connecting wires with a layer of lacquer by dipping in a viscous lacquer. The component is suspended from its connecting wires and partly immersed in the bath of lacquer. It is then moved through the lacquer at such a speed that a wave is produced in the lacquer so as to flush the surface of the component extending above the lacquer.

3,736,180
METHOD OF PRODUCING SOLAR CELLS
Horst Fischer, Reinhard Gereth, and Karl-Heinz Kreuzer, Heilbronn, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany
Filed Nov. 10, 1970, Ser. No. 88,445
Claims priority, application Germany, Nov. 17, 1969, P 19 57 659.1
Int. Cl. C23b *5/50;* H01l *15/02*
U.S. Cl. 117—217 **4 Claims**

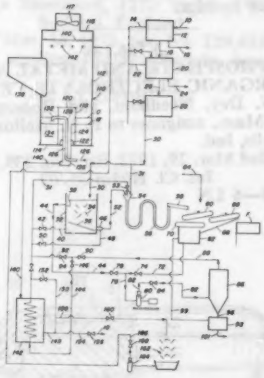


A method of producing solar cells includes subjecting the back contacts of the cells to a separate intensified intermediate sintering prior to the application of the front contact.

3,736,181
METHOD OF COATING CrO_2 WITH ALUMINA
Donald George Pye, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Oct. 19, 1970, Ser. No. 82,117. Divided and this application June 9, 1972, Ser. No. 261,213
Int. Cl. H01f *10/02*
U.S. Cl. 117—234 **13 Claims**

The alumina coating is produced by slurrying CrO_2 particles in water, in a solution of an aluminm-containing salt, in an acid, or in a base, and adding with agitation in any order, sequentially or simultaneously, a solution of at least one of an aluminum-containing salt, an acid, or a base in sufficient quantity to establish and maintain, the pH of the slurry in the range of 4 to 10.

3,736,182
PROCESS AND APPARATUS FOR WASHING PARTICULATE COMESTIBLE MATERIALS
Edward S. Wright, Pittsburgh, Pa., and John W. Angstadt, Williamsville, N.Y., assignors to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.
Filed June 25, 1971, Ser. No. 156,765
Int. Cl. C13l *1/00*
U.S. Cl. 127—24 **13 Claims**

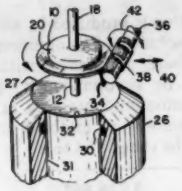


Process and apparatus for substantially reducing wash liquid requirements for the washing of raw particulate comestible materials, particularly potato slices to remove surface starch prior to cooking such slices. Washing of the slices is effected in an elongated zone having an upwardly extending portion wherein the potato slices are passed in concurrent contact with wash water to remove starch exposed during slicing of raw whole potatoes. The potato slices are separated from a starch-enriched wash liquid and are passed to a deep-fat cooking fryer. The starch-enriched liquid is introduced into a concentrator to form a concentrated starch slurry withdrawn for subsequent processing and a lean wash liquid which is returned to the washing step.

3,736,183
APPARATUS FOR AND METHOD OF EDGE MACHINING FLEXIBLE CONTACT LENSES
Israel Schrier, 30 Northfield Road, Irondequoit, N.Y. 14617
Filed July 6, 1971, Ser. No. 160,015
Int. Cl. B08b *7/00, 3/00;* B24b *7/00,9/00*
U.S. Cl. 134—33 **8 Claims**

A machine for centering a hydrophilic lens between rotatable spindles to engage a polishing pad for contouring

the edge of the lens comprises a rotatable spindle having an extensible sleeve concentrically disposed about it for raising to form a chamber for holding a fluid for floating and centering a hydrophilic lens. A clamping spindle is provided for engaging and moving the hydrophilic lens against the rotatable support spindle and to thereafter cooperatively spin the lens to displace fluids therefrom to condition the edge of the lens for contouring by engaging a slurry coated polishing pad. A novel method for preparing the hydrophilic lens for polishing comprises the steps of floating the lens on the fluid filled chamber, centering the lens concentrically with the support spindle axis, concentrically clamping the lens upon the spindle and rotating the spindle to centrifugally displace at least some fluid from the lens and thereby condition the lens for contouring of its edge.

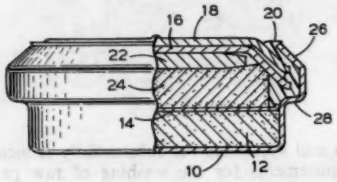


3,736,184

METAL PHOSPHATE AND METAL ARSENATE ORGANIC ELECTROLYTE CELLS

Arabinda N. Dey, Needham, and Robert W. Holmes, Dedham, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 29, 1972, Ser. No. 239,123
Int. Cl. H01m *35/02*
U.S. Cl. 136—6 LN **17 Claims**



A cathode active material is described utilizing the phosphates and arsenates of copper, iron, silver, cobalt, nickel, mercury, thallium, lead and bismuth. These materials are particularly suitable for use as positive electrodes in non-aqueous electrolyte cells and such electrodes and the cells are described. A method for fabrication of the active material into cathodes is included.

3,736,185

NON-GASSING BATTERY SEPARATOR AND METHOD OF PRODUCTION

Joseph S. Smatko, Santa Barbara, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Nov. 27, 1970, Ser. No. 92,963
Int. Cl. H01m *3/02, 41/00*
U.S. Cl. 136—30 **23 Claims**

Production of inorganic porous sintered battery separator essentially eliminating formation of gas when in contact with a zinc electrode, and permitting long cycle life of a high energy density battery such as a silver-zinc battery, produced according to one embodiment by initially firing a mixture of magnesium-bearing material, e.g., MgO, lead-bearing material, e.g., PbO, and silica (SiO_2), at temperature in the range of about 1,100 to about 1,550° C., to produce a magnesium silicate-lead silicate composition, granulating and compacting said composition into plaques, and sintering said compacted plaques at temperature ranging from about 800 to about 1,250° C., to produce porous sintered separator members, in the form of a sintered composition or composite of magnesium silcate and lead silicate, having good transverse strength and low resistivity.

3,736,186

SEPARATOR AND ELECTROLYTE MATERIAL FOR SOLID ELECTROLYTE BATTERY SYSTEMS

Charles C. Liang, Andover, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

No Drawing. Filed June 16, 1971, Ser. No. 153,794
Int. Cl. H01m *11/00*
U.S. Cl. 136—83 R **10 Claims**

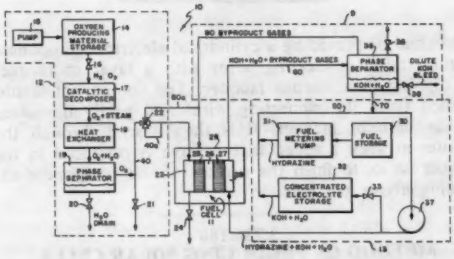
A solid electrolyte material comprising an alkali metal halide electrolyte embedded into the pores of molecular sieves and having a conductivity range between 2×10^{-7} ohm^{-1} cm.$^{-1}$ and 3×10^{-5} ohm^{-1} cm.$^{-1}$ at room temperature.

3,736,187

PRESSURE EQUILIBRATED GAS FUEL CELLS AND METHOD

John H. Harrison, Severna Park, Robert J. Bowen and Herman B. Urbach, Annapolis, and David E. Icenhower, Glenn Dale, Md., assignors to the United States of America as represented by the Secretary of the Navy

Continuation-in-part of application Ser. No. 844,767, July 25, 1969. This application Sept. 14, 1971, Ser. No. 180,351
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 B **4 Claims**



A self-pressurized fuel cell system for operation at deep sea ambient pressures includes a fuel cell having oxygen and fuel manifolds. Oxygen is produced and fed within the system to the oxygen manifold, and a fuel solution is produced and fed within the system to the fuel manifold. Pressure is maintained within a relatively flexible low strength housing surrounding the cell substantially the same as pressure ambient to the housing due to byproduct gases produced by the cell being fed to the housing.

3,736,188

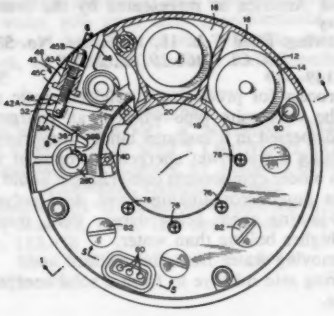
BATTERY OF RESERVE CELLS

Gordon E. Kaye, Irvington, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 6, 1972, Ser. No. 231,819
Int. Cl. H01m *21/10*
U.S. Cl. 136—90 **11 Claims**

A battery of reserve cells, each containing a hermetically sealed vial of fluid electrolyte with normally restrained

stored-energy impact device to fracture said vial to release said electrolyte to operative activating position in each cell; and unitary means, for normally restraining all said impact devices, and at will, to render all the reserve cells immediately active.

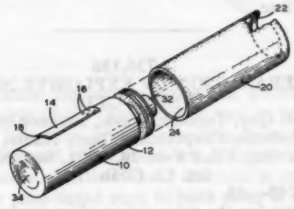


3,736,189

LOCKING DEVICE FOR BATTERY STICKS

Frank Ciliberti, Ossining, N.Y., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Feb. 29, 1972, Ser. No. 230,324
Int. Cl. H01m *1/02*
U.S. Cl. 136—132 4 Claims



This invention relates to means and methods for preventing the formation of corrosion between the outer metal can of a battery and its circumscribing insulative jacket or sleeve. A cantilever type of metal tab is affixed to usually the central portion of the battery. The tab, having a gouging finger edge portion, allows the insulative jacket to slip over the can, but the finger portion will dig into the internal surface of the jacket making it extremely difficult for the jacket to be withdrawn once it is placed over the tab. The insulative jacket, or sleeve has a crimped end and an open end, with the crimped end abutting a disc terminal of the battery so as to preclude any further downward travel on the metal can.

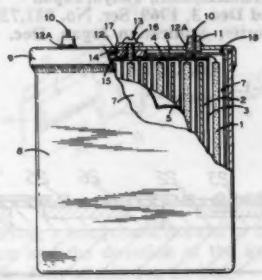
3,736,190

HERMETICALLY SEALED STRUCTURES FOR ORGANIC ELECTROLYTE SYSTEMS

Arabinda N. Dey, Needham, and Robert W. Holmes, Dedham, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed Mar. 2, 1972, Ser. No. 231,167
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 8 Claims

A hermetically sealed battery or cell casing is described comprising a casing enclosing the cell or cells and provided with a cover sealed to its casing and having, in addition to sealed electrode and leads, a filling portal for introducing the electrolyte. The filling portal is provided with a resilient primary sealing means at the internal lower portion of the portal for engaging resiliently a male-threaded closure means, said male-threaded closure means being fusibly sealed to the outer and upper portion of the portal.

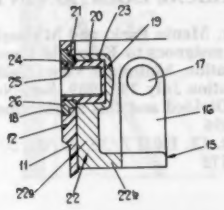


3,736,191

METHOD OF PROVIDING A TERMINAL ON AN ELECTRIC STORAGE BATTERY

Kenneth George Blandford, 1270 Yardley Wood Road, Solihull, England

Filed Mar. 30, 1971, Ser. No. 129,455
Claims priority, application Great Britain, Apr. 11, 1970, 17,335/70
Int. Cl. H01m *5/00*
U.S. Cl. 136—135 S 10 Claims

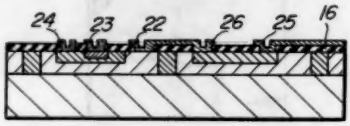


A method of providing a terminal on an electric storage battery comprises starting with a conductive lug having an aperture therein and locating the lug in contact with the inner surface of a side or end wall of the battery box so that an integral extension of the lug engages a conductive bar, the conductive bar interconnecting sets of battery plates in a pair of adjacent cell compartments of the battery. The aperture in the lug communicates with, but is of smaller cross section than an aperture in the side or end wall of the battery so that the lug defines an inwardly extending shoulder presented to the aperture in the side or end wall, and a terminal support member is engaged in the aperture in the lug. The support member defines an outwardly extending shoulder and an annular conductive washer is located in the aperture in the side or end wall so that one face of the washer abuts against the shoulders on the lug and the support member respectively. A seal is effected between the washer and the lug to trap the support member therebetween, a terminal is engaged with the support member, and an electrical connection is provided from the terminal through the lug to the conductive bar.

3,736,192
INTEGRATED CIRCUIT AND METHOD OF MAKING THE SAME

Takashi Tokuyama, Hoya-shi, Takashi Tsuchimoto, Kodaira-shi, Takahide Ikeda, Kokubunji-shi, and Shigeru Nishimatsu and Hisumi Sano, Tokyo, Japan, assignors to Hitachi, Ltd., Takyo, Japan

Filed Dec. 3, 1969, Ser. No. 881,739
Claims priority, application Japan, Dec. 4, 1968, 43/88,303
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 9 Claims

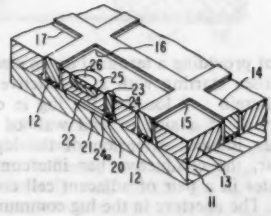


An integrated circuit comprising a semiconductor epitaxial layer having two or more semiconductor circuit elements such as a transistor, diode and resistor formed on one surface thereof, and a high resistivity region formed by implantation of ions from the surface of the epitaxial layer, the semiconductor circuit elements being electrically divided into a plurality of groups by the high resistivity region of the epitaxial layer formed by ion implantation.

3,736,193
SINGLE CRYSTAL-POLYCRYSTALLINE PROCESS FOR ELECTRICAL ISOLATION IN INTEGRATED CIRCUITS

Ross N. Tucker, Menlo Park, and Michael L. Barry, Palo Alto, Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Original application July 29, 1969, Ser. No. 845,822, now abandoned. Divided and this application Oct. 26, 1970, Ser. No. 84,096
Int. Cl. H01l *7/36, 19/00, 5/00*
U.S. Cl. 148—175 12 Claims



A semiconductor wafer, suitable for use in forming integrated circuits, contains, on a substrate, islands of single crystal silicon of one conductivity type, each island being isolated from adjacent islands by walls of polycrystalline silicon of opposite conductivity type. Polycrystalline silicon pipes in the single crystal silicon provide controlled resistance contacts from the top surface of the single crystal silicon to buried collector layers underlying the single crystal silicon.

3,736,194
METHOD OF PREPARING A COMPOSITE EXPLOSIVE WITH A WATER-WET ENERGETIC COMPOUND

Harry Heller, Silver Spring, Md., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Feb. 18, 1966, Ser. No. 530,253
Int. Cl. C06b *19/02, 21/00*
U.S. Cl. 149—19 7 Claims

1. A process for producing a solid energetic composition of the composite type wherein an energetic compound is dispersed in a resinous binder comprising:
(a) mixing a water-wet energetic compound with resinous binder components comprising a liquid polymer and a liquid cross-linking agent, said polymer and cross-linking agent being denser than, insoluble in and higher boiling than water,
(b) removing water from the mixture and
(c) curing said mixture to form a solid energetic composite.

3,736,195
GELLED HYDRAZINE CONTAINING ROCKET FUEL

George W. Burdette, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Feb. 11, 1966, Ser. No. 527,382
Int. Cl. C06b *15/00, 15/04*
U.S. Cl. 149—36 2 Claims

1. A gelled rocket fuel formulation which is stable at temperatures ranging from −65° to +165° F. consisting essentially of 92.5% by weight of a fuel composed of a mixture of monomethylhydrazine and hydrazine, 6% by weight silicon dioxide and 1.5% by weight hydroxyethylcellulose.

3,736,196
PREPARATION OF EXPLOSIVE NITRIC ESTER GELS

Gordon M. Gay, Tacoma, Wash., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

No Drawing. Filed Feb. 24, 1971, Ser. No. 118,507
Int. Cl. C06b *1/04*
U.S. Cl. 149—48 3 Claims

A process for the preparation of an explosive composition containing nitrocellulose and an explosive nitric ester, such as nitroglycerine. The nitrocellulose is first mixed with a liquid dispersing agent, such as ethylene glycol and/or glycerine, and thereafter mixed with the explosive nitric ester.

3,736,197
POWDERLESS ETCHING BATH COMPOSITIONS AND ADDITIVES

Harold J. Messerschmidt, Stockholm, Karl Heyman, Montclair, and Bernadou W. Johnsen II, Paterson, N.J., assignors to Mona Industries, Inc., Paterson, N.J.

No Drawing. Filed Mar. 29, 1972, Ser. No. 239,383
Int. Cl. B44n *3/02*; C23g *1/26*
U.S. Cl. 156—14 26 Claims

Improved powderless etching bath additive compositions, especially for etching magnesium photo-engraving plates, containing

(a) at least one water-soluble or water-dispersible sulfonated fatty acid of from 8 to 24 carbon atoms, wherein the sulfur atom in the sulfonate group is directly bonded to a carbon atom, and
(b) at least one saturated or olefinically unsaturated monocarboxylic acid of from 8 to 24 carbon atoms,
(c) at least one polyhydric alcohol of from 2 to 10 carbon atoms or an ether derivative thereof; and, optionally,

(d) at least one lower mono-carboxylic acid of from 2 to 6 carbon atoms and/or polycarboxylic acid of from 2 to 10 carbon atoms;

and etching baths containing such compositions and nitric acid and water, give good etching performance, particularly improved definition of the printable area of the plate, depth, of half-tones, and side wall smoothness.

3,736,198

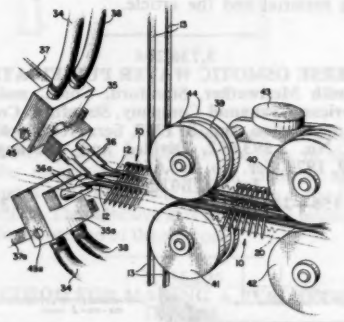
METHOD OF FORMING A NAILING STRIP BY APPLYING A HOT MELT LIQUID PLASTIC

Walter Herman Leistner, 97 Alamosa Drive, Willowdale, Ontario, Canada

Continuation-in-part of abandoned application Ser. No. 737,629, June 17, 1968. This application Feb. 8, 1971, Ser. No. 113,458

Int. Cl. B32b *31/18, 31/20, 31/30*

U.S. Cl. 156—65 **3 Claims**



This specification discloses a method of forming nails into a nailing strip of the type which is used in power operated nailing hammers, in which nailing strips the nails are supported spaced apart from one another by easily breakable material. The breakable material is applied in a hot liquid or semi-liquid state to both sides of the nails simultaneously and squeezed into the space between them. Covering material may be applied to the exterior of the hot material so as to add strength, and also to avoid accumulations of such material on the apparatus. The specification also discloses apparatus for performing such a method in which the nails are arranged to lie on a movable conveyor which is oriented in a plane angled relative to the horizontal whereby to employ both the horizontal and the vertical component of gravitational force acting on the nails and in which the hot material is extruded directly over and under the nails as they are carried on the conveyor from both sides in a direction slanted towards the direction of movement of the conveyor.

3,736,199

DEVICE AND METHOD FOR INSTALLING SURFACE MOLDING

John R. Mason, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

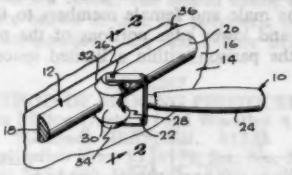
Filed May 3, 1971, Ser. No. 139,358

Int. Cl. E04b *13/10*

U.S. Cl. 156—71 **6 Claims**

Surface molding has a uniform cross section for extrusion, and has an adhesive-faced surface for attachment to a body. Its convex outer face defines the configuration of the surface of revolution on a molding-applying roller. The molding applying roller is manually operable and rotatable on the axis of the surface of revolution.

The method comprises engaging the adhesive-faced surface of the molding upon a body, and engaging the curved surface of revolution of the roller against the outer molding face, moving the roller in a direction along the length of the molding normal to the axis of the roller, and apply-



ing a force having a component normal to both the direction of motion and the direction of the axis so that the molding is adhesively attached to the body.

3,736,200

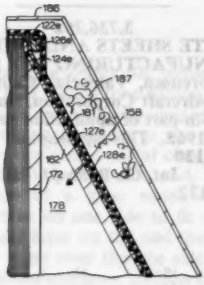
METHOD FOR VACUUM MOLDING BOOK BINDINGS

William H. Abildgaard, Los Altos Hills, and Charles T. Groswith, Palo Alto, Calif., and Hans L. Melgaard, Mound, Minn., assignors to Abildgaard Laboratories Inc., Mountain View, Calif.

Original application June 16, 1969, Ser. No. 833,382, now Patent No. 3,608,116, dated Sept. 28, 1971. Divided and this application Mar. 10, 1971, Ser. No. 122,949

Int. Cl. B29c *17/04, 27/00;* **B42c** *19/00;* **B32d** *31/00*

U.S. Cl. 156—85 **11 Claims**



The method involves softening thermoplastic book covers and spine caps by application of heat and simultaneously applying a vacuum on the inside of a flexible membrane so that atmospheric pressure forces the membrane against the covers and spine, molding the same together and joining the spine to the edges of the pages. By use of a prepared casting release paper, simulated grain may be embossed in the covers and various legends and ornamentation applied. The molding of the cover may laminate various layers of plastic of different thicknesses, colors, etc. The edges of the covers are rounded during molding. Panels or imbedded inserts may be formed in the covers or spine.

3,736,201

METHOD FOR MOLDING BOWL-SHAPED ARTICLES

Shoichi Teraoka, 5–32 Nishi 2-chome, Senriyama, Suita-shi, Osaka, Japan

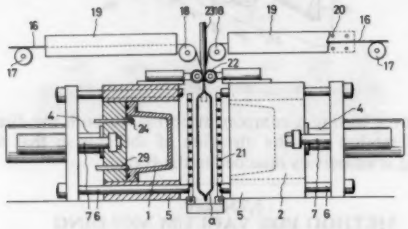
Filed Nov. 19, 1970, Ser. No. 91,028

Int. Cl. B29c *17/07;* **B32b** *31/20*

U.S. Cl. 156—145 **8 Claims**

A method of molding bowl-shaped plastic articles having a multi-layer wall structure is disclosed. In the present method a parison is supplied to the space between the

male and female members of a split mold, at least one of which members includes a shelly-shaped mold slidably mounted thereon for engagement with the other member. The shelly-shaped mold is moved into engagement with the other member while holding the parison in position between the male and female members to thereby close the upper and lower edge portions of the parison while confining the parison within a limited space that is de-



fined by the shelly-shaped mold and by the inner walls of the male and female members. The split mold is fully closed by bringing the male and female members into final engagement with each other and concurrently therewith, introducing air under pressure into the interior of the parison to cause the parison to engage fully the inner walls of the members and to conform to the shape and configuration thereof.

3,736,202

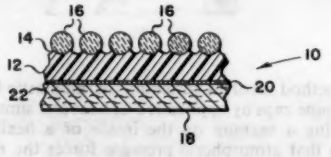
COMPOSITE SHEETS AND PROCESSES OF MANUFACTURING THE SAME

Vernon S. Sorenson, Valencia, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Continuation-in-part of application Ser. No. 507,806, Nov. 15, 1965. This application Jan. 22, 1970, Ser. No. 5,120

Int. Cl. B65h *81/02*

U.S. Cl. 156—172 **7 Claims**



A method of manufacturing composite sheets for structural fabrication wherein a lamina of unpolymerized resin is heated sufficiently to cause it to become tacky, but below its polymerization temperature; monofilament strands are layed up on the tacky lamina and thereafter the composite sheet is heated under pressure to yield a polymerized composite in which the strands are coated and bonded to the sheet.

3,736,203

METHOD OF FORMING ANNULAR SHAPED WRAPPING

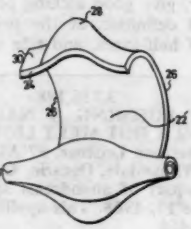
Isago Miura, 1–4–19 Honcho, Asaka, Japan

Filed Feb. 8, 1971, Ser. No. 113,376

Int. Cl. B65h *81/00*

U.S. Cl. 156—189 **7 Claims**

A method and an apparatus is provided for forming packing or wrapping material of an elastic plastic sheet material for products of special shapes and particularly annular articles. The sheet of material is permanently stretched in a longitudinal direction with the amount of stretching varying across the width of the sheet so that



the sheet assumes a permanent shape to insure wrapping of an annular article without any air gaps between the wrapping material and the article.

3,736,204

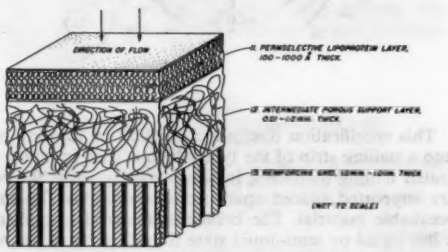
REVERSE OSMOTIC WATER PURIFICATION

Lewis Smith Meriwether, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Original application Aug. 8, 1969, Ser. No. 848,475, now Patent No. 3,593,852. Divided and this application July 19, 1971, Ser. No. 163,676

Int. Cl. B01d *13/00*

U.S. Cl. 156—242 **3 Claims**


DIRECTION OF FLOW
1. PERMSELECTIVE LIPOPROTEIN LAYER, 100 - 1000 Å THICK.
2. INTERMEDIATE POROUS SUPPORT LAYER, 0.01 - 10 MIL THICK.
3. REINFORCING GRID, 10 MIL - 100 MIL THICK.
(NOT TO SCALE)

Brackish or saline water may be purified by forcing the water under comparatively high pressure through a reverse osmotic membrane consisting of the reconstituted membranes derived from living cells such as red blood cells, which reconstituted membranes themselves are in the order of 50 to 150 angstroms thick with at least one and perhaps several layers of such reconstituted membranes supported on a support layer which may be of a water permeable cellulose which in turn is mechanically reinforced by a grid, porous plate or ceramic type plate which has high mechanical strength. The membrane is formed by ultrasonic rupturing of the cell membranes followed by the reaggregation of the resulting lipoprotein subunits into a continuous membrane having a thickness and composition similar to that of the intact cell membrane but of much greater size.

3,736,205

METHOD FOR ADHERING MATERIALS TOGETHER

Eugene F. Sullivan, San Jose, Calif., assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.

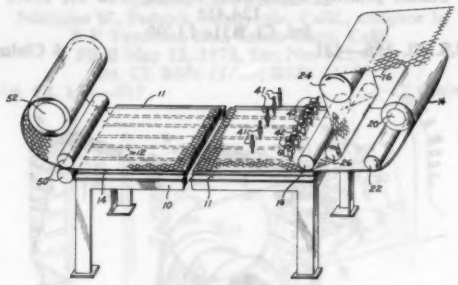
Continuation-in-part of abandoned application Ser. No. 73,377, Sept. 17, 1970. This application Mar. 26, 1971, Ser. No. 128,248

Int. Cl. B32b *7/14*

U.S. Cl. 156—291 **11 Claims**

A method for continuously attaching a length of magnetically attractable material to a length of a non-mag-

netically attractable material. The magnetically attractable material rests in contact with and adjacent to the other material, both being moved in unison along a support. Adhesive is applied at selected contacting positions of the magnetically attractable material and the other material where the two materials move past the inlet end



of the support. An air blast shapes and cools the adhesive immediately after it is applied. Magnets in the support draw the magnetically attractable material against the other and maintain the two materials in a fixed, adjacent relationship. The adhesive sets as the two materials move to the discharge end of the support.

3,736,206

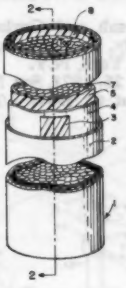
METHOD FOR MAKING A PYROTECHNIC DEVICE

Vern Thomas Dinsdale and Russell Reed, Jr., Brigham City, and Robert E. Meyer, North Ogden, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

Original application Feb. 10, 1969, Ser. No. 797,906, now Patent No. 3,605,624. Divided and this application May 18, 1971, Ser. No. 144,680

Int. Cl. B32b *29/00*; C06d *1/10*

U.S. Cl. 156—293 **4 Claims**



A flare body for a parachute type flare providing superior brilliance and sustained output of illumination even after 14 days of 24 hour temperature cycling between −65 and 165° F. is obtained by means of a novel, castable illuminant flare composition comprising an uncured, high oxygen content liquid polymeric binder material, particularly a liquid saturated polyester polymer/liquid epoxy resin system, which is loaded into a flare body casing lined on its inner bottom and side surfaces with at least partially cured liner material comprising the binder material and further comprising an anchor sheet material bonded completely on its inner surface to the outer surface of the liner and on its outer surface to the inner casing wall essentially only by a relatively narrow anchor strip of material running from the top to the bottom of the casing. The loaded casing and its contents then are heated to cure the polymeric binder material in the composition, liner and anchor strip.

3,736,207

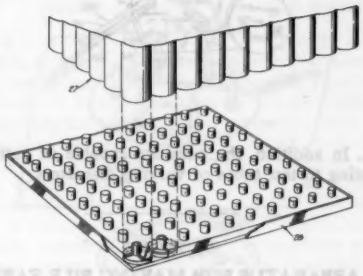
METHOD OF MAKING PHOTOCELLS

John Milton Grant, 11645 Woodley Ave., Granada Hills, Calif. 91344

Original application Mar. 23, 1970, Ser. No. 21,918, now Patent No. 3,634,690. Divided and this application Apr. 14, 1971, Ser. No. 133,948

Int. Cl. B29b *27/12*

U.S. Cl. 156—294 **6 Claims**



A method of making photocells includes forming first subassemblies each of a glass tube having secondary emissive internal surfaces and a tubular electrode and insulated inner coaxial conductor inserted at one end, sealing the elements together, applying a metal conductor layer such as copper over the opposite tube end, forming second subassemblies each of a glass window disk having a cylindrical projection on one side to fit within said tube and a photocathode layer on the end thereof, applying a second conductor layer over the one side of the window, depositing a metal sealant layer such as indium onto said second layer, processing the photocathode, and bringing the first and second subassemblies together with the glass tube fitting over the projection at a temperature to melt the sealant and seal the elements together to form a complete photocell.

3,736,208

AUTOMATIC LABELING MACHINE

Jack A. Kraft, 119 Elm Lane, New Hyde Park, N.Y. 11040, and Harold D. Kraft, 147—14 70th Ave., Flushing, N.Y. 11367

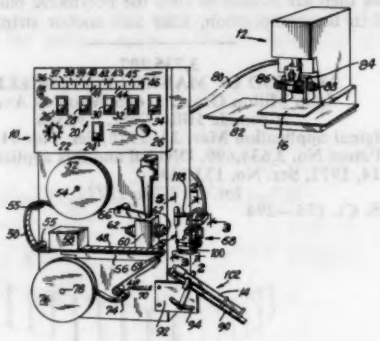
Filed Aug. 20, 1970, Ser. No. 65,523

Int. Cl. B65c *3/02, 9/18, 9/36*

U.S. Cl. 156—361 **25 Claims**

A labeling apparatus for directly applying a label to an item immediately after the label is printed with a coded symbol. The labeling apparatus is provided with a master and a slave labeling unit with each capable of operating independently of the other. Each is capable of printing the same code a predetermined number of times with the slave unit generally printing the same code as the master unit. For use in medical laboratories, for instance, the master unit may label tests tubes while the slave unit labels corresponding requisition slips. An applicator is provided to carry the label after being printed to an applying position where the applicator applies the label to a test tube or the like. The applicator includes a pair

of spread apart pads which are spaced apart a distance great enough to avoid obliterating the printed code on the



label. In addition, the pads are capable of automatically adjusting to test tubes of varying diameters.

3,736,209

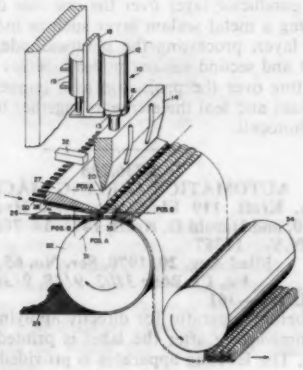
APPARATUS FOR MAKING PILE FABRIC

Charles W. Carpenter, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Application Nov. 29, 1968, Ser. No. 780,038, now Patent No. 3,640,786, which is a continuation-in-part of abandoned application Ser. No. 731,221, May 22, 1968. Divided and this application Oct. 16, 1970, Ser. No. 81,510

Int. Cl. D04h *11/00*

U.S. Cl. 156—435 **7 Claims**



This invention relates to apparatus for making pile fabric wherein thermoplastic pile yarn is fusion bonded to a thermoplastic backing by means of sonic energy, thereby effecting localized heating of the pile yarn and backing at the points of contact without loss of orientation in either the pile yarn or the backing, if an oriented backing is used, between the bond points.

3,736,210

APPARATUS FOR PRODUCING SOLID ELECTRICAL INSULATORS

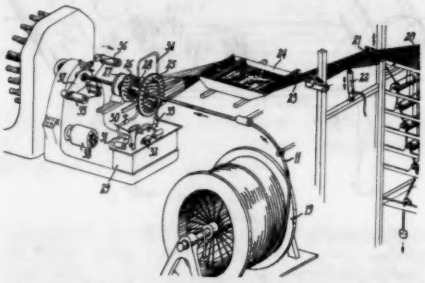
Alexandre Kaczerginski, Vichy, Allier, France, assignor to Societe Europeenne d'Isolateurs en Verre Sediver, Paris, France

Original application Oct. 7, 1968, Ser. No. 765,524, now Patent No. 3,567,541. Divided and this application Sept. 16, 1970, Ser. No. 72,731

Claims priority, application France, Oct. 13, 1967, 124,412

Int. Cl. B31c *13/00*

U.S. Cl. 156—431 **5 Claims**



The continuous production of laminated sections of general cylindrical formation having excellent mechanical and electrical properties to render them especially adapted for use as insulators in electrical transmission networks, and comprising a central core of cellular plastic foam sheathed by one or more layers of resin reenforced with resin-impregnated glass filaments extending longitudinally and circumferentially as well as by an outer relatively thick covering layer of resin, with or without fillers, which is molded before hardening with a smooth cylindrical, fluted or finned outer surface. The invention contemplates the inclusion of anchoring sockets at predetermined spacings along the central core, which, upon severance into individual units, serve for the sealing therein of supporting devices for the units.

3,736,211

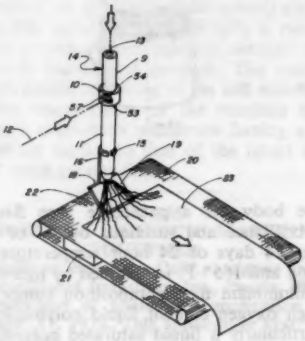
TWO-PLANAR DEFLECTOR FOR DISPERSING AND DEPOSITING NONWOVEN FILAMENTARY STRUCTURES

Walter Peter Lipscomb and Garland Linwood Turner, Chesterfield County, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,420

Int. Cl. D04h *3/00*

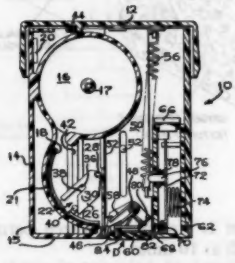
U.S. Cl. 156—441 **7 Claims**



An apparatus for augmenting dispersal and for improving deposition of a plurality of continuous filaments onto

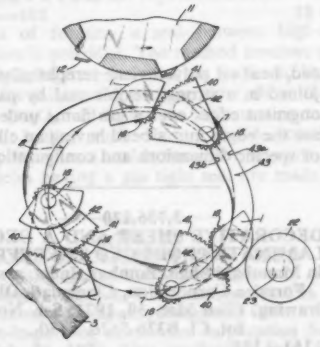
a continuously moving surface whereby random distribution of the filaments is provided for the production of uniformly distributed nonwoven webs. A nonmoving two-planar deflector is positioned near the exit of an aspirator so as to provide greater openness and greater random laydown of filaments.

3,736,212
STAMP APPLICATOR
Nicholas W. Fedrick, Sunnyvale, Calif., assignor to P F Ventures, Inc., Santa Clara, Calif.
Filed May 12, 1971, Ser. No. 142,479
Int. Cl. B65c *11/04*; B32b *31/18*
U.S. Cl. 156—517 **7 Claims**



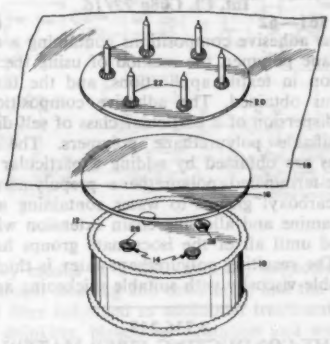
A stamp applicator including a housing with a depressible cap thereon for actuating the feeding of a strip of stamps from a hopper to a dispensing position whereat a single stamp is severed and then pressed against a surface wetted by moisture dispensing means which are also contained within the housing and actuated by depression of the said cap.

3,736,213
LABEL EXTRACTOR IN A LABELING MACHINE
Norbert Jörss and Erich Eder, Neutraubling, Germany, assignors to Hermann Kronseder, Neutraubling Germany
Filed Feb. 23, 1971, Ser. No. 118,117
Claims priority, application Germany, Mar. 6, 1970, P 20 10 652.9; France, Nov. 6, 1970, 7040126
Int. Cl. B65c *9/12*; B65h *3/06*
U.S. Cl. 156—570 **10 Claims**



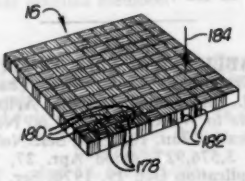
Apparatus for extracting labels from a stationary label magazine having a geometry in which the axis of oscillation of the label transfer shoe is offset toward the shoe surface from the center of curvature of the shoe surface such a distance that the center of curvature of the shoe describes substantially a straight line parallel to the extraction plane of the foremost label in the magazine when the surface rolls over the foremost label. The ratio between the maximum radius of shoe surface oscillation and the distance between the rotor axis and the axis of shoe surface oscillation substantially corresponds to the ratio between one-half of the label length plus one-half of the spacing between successive labels and the shortest distance between the foremost label and the rotor axis.

3,736,214
CAKE COVER
Percival J. McBirnie, 530 Arbor Drive, San Diego, Calif. 92103
Filed July 20, 1971, Ser. No. 164,253
Int. Cl. B65b *25/16*
U.S. Cl. 161—18 **4 Claims**



A cake cover protector having a thin transparent sheet that completely covers a cake, which sheet is draped over a plate that is supported on the top of the cake and is spaced from the cake, which plate also supports candles above the transparent sheet. The cover protects the cake from being sprayed with spittle when the candles are blown out and is easily removed for cutting the cake and is entirely transparent allowing a complete view of the cake.

3,736,215
METHOD AND APPARATUS FOR FABRICATING GLASS FIBER CUSHIONING MATERIAL
John W. Felder, Jr., Palos Verdes Peninsula, and Sterling Barnett, Sepulveda, Calif., assignors to L. S. Associates, Inc., Torrance, Calif.
Filed Aug. 11, 1971, Ser. No. 170,824
Int. Cl. B32b *3/10, 3/14, 5/12, 31/06, 31/18*
U.S. Cl. 161—36 **14 Claims**



Method and apparatus for fabricating an improved glass fiber multisectioned cushioning material with

laminae of adjacent sections normal to each other having uniform alignment of fibers in a primary load direction. Continuously moving the glass fiber forwardly while simultaneously performing different steps on different portions of the glass fiber including slitting the glass fiber into longitudinal strips, assembling the strips into a single-layered structure with the laminae of the adjacent strips normal to each other, assembling a plurality of single-layered structures into a multilayered structure with the laminae of adjacent strips normal to each other, and slicing crosswise through the multilayered structures.

3,736,216

TEXTILE ADHESIVE LAMINATES BASED ON POLYURETHANE LATICES

David Trimble Hermann, Belle Mead, and Kenneth Herald Remley, Warner, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Dec. 20, 1968, Ser. No. 785,779, now Patent No. 3,640,924. Divided and this application Sept. 28, 1971, Ser. No. 184,610

Int. Cl. C08g *22/16*

U.S. Cl. 161—62 **6 Claims**

Aqueous adhesive compositions containing a dispersed polyurethane polymer, the method of using the adhesive composition in textile applications, and the textile materials thus obtained. The adhesive composition is an aqueous dispersion of a particular class of self-dispersible or emulsifiable polyurethane polymers. The aqueous dispersions are obtained by adding a particular class of isocyanate-terminated polyurethane prepolymers having pendant carboxyl groups to water containing a tertiary aliphatic amine and allowing chain extension with water to proceed until all of the isocyanate groups have been reacted. The resulting polyurethane latex is thickened to the desirable viscosity with suitable thickening agents.

3,736,217

LIGHT-CONDUCTING FIBER MATERIAL

Kazuyoshi Nagao, Yokohama, Japan, assignor to American Optical Corporation, Southbridge, Mass.

Original application Sept. 29, 1969, Ser. No. 861,871, now Patent No. 3,666,587. Divided and this application Jan. 28, 1971, Ser. No. 110,757

Int. Cl. B32b *3/00*

U.S. Cl. 161—143 **3 Claims**

Plastic light-conducting fiber ribbons are formed of a transparent high refractive index strip of plastic material covered with thin films of relatively low refractive index plastic material. The covered strip is heated and rolled to the configuration of a multiplicity of interconnected juxtaposed fibers from which monofilaments may be cut longitudinally of the ribbon.

3,736,218

SHRINKABLE PERMEABLE TEXTURE FILM

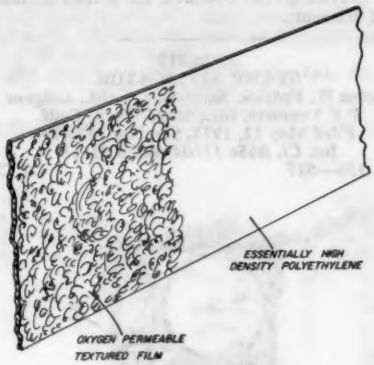
Razmic S. Gregorian, Arken, S.C., Charles C. Kirk, Laurel, Md., and James A. Cote, Arlington Heights, Ill., assignors to W. R. Grace & Co., New York, N.Y.

Original application Jan. 10, 1969, Ser. No. 790,422, now Patent No. 3,576,927, dated Apr. 27, 1971. Divided and this application Oct. 19, 1970, Ser. No. 82,135

Int. Cl. B32b *27/06, 27/16, 33/00*

U.S. Cl. 161—164 **1 Claim**

Polyethylene films, highly permeable to oxygen, are made by sintering grains of high-density polyethylene, irradiating the resulting sheet to about 3 megarads, melting out the sintered structure, and irradiating a second time.



When the sheet is stretched, oxygen permeability is increased as much as 10 times.

3,736,219

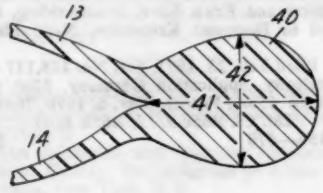
HEAT SEALED POLYESTER FILM

Larry S. McTaggart, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 30, 1971, Ser. No. 175,945

Int. Cl. B32b *3/02*

U.S. Cl. 161—147 **3 Claims**



Oriented, heat set polyethylene terephthalate film edges can be joined in a strong, flexible seal by passing superposed congruent edges over a gas flame under conditions which fuse the edges into a bead having an elliptical cross section of specific dimensions and configuration.

3,736,220

THIN DECORATIVE SHEET AND A DECORATIVE LAMINATE PRODUCED THEREFROM

Bipin Manubahi Shah, Bombay, India, assignor to Formica Corporation, Cincinnati, Ohio

No Drawing. Filed Mar. 30, 1971, Ser. No. 129,624

Int. Cl. B32b *5/28, 5/30*

U.S. Cl. 161—156 **10 Claims**

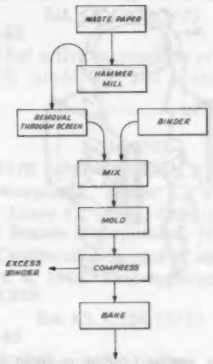
A decorative paper sheet for use in a decorative laminate impregnated with an acrylic polymer composition and preferably with a melamine resin-acrylic polymer composition and surfaced with finely divided particles of a polymer of acrylonitrile and to the laminates produced therefrom.

3,736,221

STRUCTURAL SHAPE BASED ON WASTE PAPER AND METHOD OF PROVIDING THE SAME

King W. Evers, 963 Kolln St., Pleasanton, Calif. 94566, and George H. Larsen, 761 Hayes Court, Livermore, Calif. 94550

Filed July 29, 1971, Ser. No. 167,363
Int. Cl. B32b *5/02, 31/20*
U.S. Cl. 161—170 9 Claims



A structural shape is provided by treating dry waste paper in a hammer mill having a peripheral speed of about 4500 feet per minute until the waste paper is reduced to individual paper fibers. The fibers are withdrawn by vacuum from the hammer mill through a screen. They are coated thoroughly with an aqueous binder, such as polyvinyl chloride, urea-formaldehyde or phenolic resin. A sufficient mass of so-coated fibers is then compressed (with release of water) under pressure of about 6000 pounds per square inch and is then baked in compressed form for six to eight hours at about 250° Fahrenheit to result in a geometrical body having a density of about 40 pounds per cubic foot. The completed body is adequately strong and is otherwise suitable for construction or building purposes.

3,736,222

CERAMIC ARTICLES AND METHOD OF SEALING CERAMICS

Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,306
Int. Cl. C04b *35/10, 37/00, 39/00*
U.S. Cl. 161—182 10 Claims

A method of forming a seal between high-density alumina bodies is provided. The method involves placing an Al_2O_3-Ga_2O_3 mixture between the bodies to be sealed and heating the mixture to a temperature above the melting point of Ga_2O_3 and below the deformation temperature of the bodies such that a solid solution of Al_2O_3-Ga_2O_3 forms as a seal between the alumina bodies. Ceramic articles having a gas tight seal are made by the method.

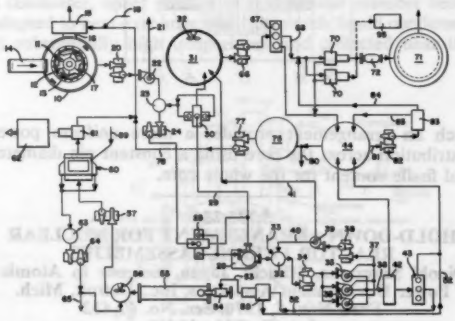
3,736,223

WASTE TREATMENT AND FIBER RECLAMATION SYSTEM

Paul G. Marsh, Hamilton, Ohio, assignor to The Black Clawson Company, Hamilton, Ohio

Continuation-in-part of abandoned application Ser. No. 14,431, Feb. 26, 1970. This application Dec. 1, 1970, Ser. No. 94,084
Int. Cl. D21b *1/08*
U.S. Cl. 162—4 13 Claims

A process for recovering reusable papermaking fiber from municipal refuse includes mixing the refuse with liquid in a treatment vessel and reducing the relatively frangible portions of the refuse by subjecting the mixture to hydraulic and mechanical shear while separately removing relatively infrangible portions from the vessel. The resulting slurry of frangible refuse and water is centrifugally cleaned to remove inorganics such as glass, and the centrifugally cleaned slurry is then screened to separate reusable papermaking fibers from the fine fibrous material and other organics, in excess of 25% of the paper fibers being rejected with the screened materials. The latter, which will usually be rich in synthetic resins, may then be treated under heat and pressure to produce hardboard, or merely dewatered and burned. The fibers separated from the other portions of the slurry may be



classified by means of a fiber selector, subjected to further centrifugal cleaning and dewatered, and the resulting dewatered fiber subjected to additional treatment such as digestion, deinking, bleaching, floatation and washing to upgrade the quality of the fiber for subsequent reuse. Additionally, the slurry may be treated by refining equipment operating at low consistency and tackle clearances and then subjected to froth flotation and/or further centrifugal cleaning. The inorganics removed by centrifugal cleaning, as well as the relatively infrangible portions of the refuse, may be further classified for reuse, particularly the metal and glass fractions, or they may be disposed of by landfill methods.

3,736,224

CATALYZED OXYGEN BLEACHING

Martin Grayson, Stamford, and Charles Edward Farley, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 16, 1971, Ser. No. 153,679
Int. Cl. D21c *9/10*
U.S. Cl. 162—65 12 Claims

A method for the delignification and bleaching of lignocellulosic materials under the action of oxygen and alkali in an alkaline medium and in the presence of from about 0.005% to about 5.0%, by weight, based on the weight of said material, of a copper-containing material which converts, at least in part, to copper oxide in the presence of said alkali in said alkaline medium.

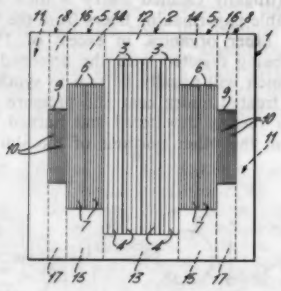
3,736,225

Allan Barker, Chester, and Maurice Arthur Perks, Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed July 27, 1970, Ser. No. 58,454
Claims priority, application Great Britain, Aug. 8, 1969, 39,924/69
Int. Cl. G21c *3/00*
U.S. Cl. 176—40 4 Claims

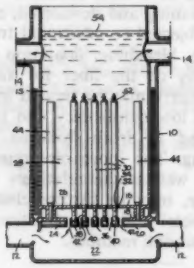
A fast reactor core structure comprises inner, intermediate and outer core zones. The fuel members of the inner zone are longer and more widely spaced than the

fuel members of the intermediate zone. Likewise the fuel members of the intermediate zone are longer and more widely spaced than the fuel members of the outer zone.



Such an arrangement provides a more uniform power distribution across the core using a constant pin diameter and fissile content for the whole core.

3,736,226
HOLD-DOWN ARRANGEMENT FOR NUCLEAR REACTOR FUEL SUBASSEMBLIES
Naoki Sakurama, Hitachi, Japan, assignor to Atomic Power Development Associates, Inc., Detroit, Mich.
Filed Nov. 6, 1970, Ser. No. 87,432
Int. Cl. G21c *15/00*
U.S. Cl. 176—50 **7 Claims**



This invention relates to means for retaining a nuclear fuel subassembly in position on support means by using hydraulic pressure. The support means divides the reactor vessel into four plenums by means of three support plates disposed one above the other. The fuel subassemblies are mounted on the top support plate and have portions which project through the second plate and are exposed to the pressure conditions of the lower medial plenum. Communication means interconnect the upper plenum with the lower medial plenum at substantially the same relatively low pressure while communication means interconnect the lower plenum and the upper medial plenum to maintain them both at substantially the same relatively high pressure. Inlets for the fuel subassemblies are disposed in the upper medial plenum and outlets from the fuel subassemblies are in the upper plenum.

3,736,227
NUCLEAR REACTOR FUEL ELEMENT SPACER ASSEMBLY LOCK
Susumu Nakazato, Pittsburgh, Pa., assignor to Continental Oil Company, Ponca City, Okla.
Filed June 1, 1970, Ser. No. 41,989
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **9 Claims**

A nuclear reactor fuel element spacer arrangement has a fuel element supporting and spacing means through which respective fuel rods extend and which permits axial movement of the individual fuel rods while restraining them against lateral movement. In order to restrict axial movement of the spacer with respect to the entire assembly of rods, the fuel rod spacer is fastened to one of

the fuel rods by a spring-loaded snap-in locking device. This prevents the fuel rod spacer distance along the fuel rods from being shifted as, for example, from fuel rod vibration or coolant drag force on the spacer or as a result of channel placement during installation.

3,736,228
PROCESS FOR PRODUCING INOSINE
Kiyoshi Nakayama, Sagamihara, Akira Furuya, Kawasaki, and Fumio Kato, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Filed Jan. 27, 1971, Ser. No. 110,280
Claims priority, application Japan, Feb. 5, 1970, 45/9,614
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **14 Claims**

Inosine is produced by fermentation using an inosine-producing microorganism belonging to the genus Brevibacterium, preferably *Brevibacterium ammoniagenes*. The strains employed have the characteristic that their system for the biosynthesis of 5'-inosinic acid undergoes no feedback inhibition and/or repression.

3,736,229
FERMENTATION PROCESS FOR THE PRODUCTION OF D-MANNITOL
John R. De Zeeuw, Stonington, and Edward J. Tynan III, Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.
No Drawing. Filed Feb. 18, 1971, Ser. No. 116,670
Int. Cl. C12d *13/02*
U.S. Cl. 195—28 R **4 Claims**

A process for producing D-mannitol by aerobically fermenting an aqueous hydrocarbon-containing nutrient medium with a new strain of the yeast, *Candida lipolytica*.

3,736,230
PROCESS FOR PRODUCING 6-AMINO-PENICILLANIC ACID
Per Staffan Delin, Villagaten 24; Bertil Ake Ekstrom, Kummelvagen 26; Lars Solve Nathorst-Westfeld, Kummelvagen 32; Berndt Olof Harald Sjoberg, Kummelvagen 24; and Karl Hugo Thelin, Fornminnesvagen 9, all of Sodertalje, Sweden
No Drawing. Continuation-in-part of application Ser. No. 799,983, Feb. 17, 1969, now Patent No. 3,622,462. This application Nov. 22, 1971, Ser. No. 200,826
Int. Cl. C12d *1/02*
U.S. Cl. 195—36 P **15 Claims**

A process for the production of hypoallergenic 6-amino-penicillanic acid by enzymatic degradation of a natural

penicillin with an *Escherichia coli* penicillin acylase chemically fixed to a polymeric support.

3,736,231

PREPARATION OF INSOLUBILIZED ENZYMES

William L. Stanley, Richmond, and Alfred C. Olson, El Cerrito, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,475

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **7 Claims**

Insolubilized but active enzymes are prepared by reacting an enzyme with tannic acid and glutaraldehyde.

3,736,232

PROCESS FOR GROWING MICROORGANISMS

Robert G. Dworschack, James C. Chen, William R. Lamm, and Larry G. Davis, Clinton, Iowa, assignors to Standard Brands Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 765,015, Oct. 4, 1968. This application Apr. 9, 1971, Ser. No. 132,818

Int. Cl. C12d *13/10*

U.S. Cl. 195—65 **11 Claims**

Under submerged, aerobic culture conditions, microorganisms of the Streptomyces genus produce glucose isomerase. The presence of sorbitol in the fermentation medium induces microorganisms of the Streptomyces genus to produce greater quantities of glucose isomerase.

3,736,233

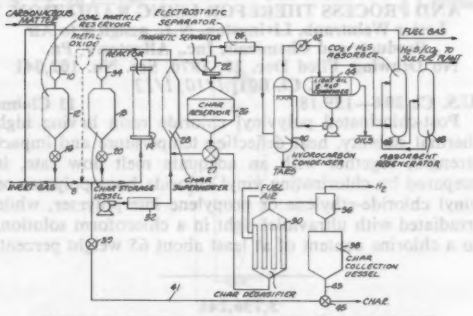
PROCESS OF PYROLYZING AND DESULFURIZING SULFUR BEARING AGGLOMERATIVE BITUMINOUS COAL

Allan Sass, South Pasadena, and Clem Finney and Harry McCarthy, Claremont, Calif., and Paul Kaufman, Vienna, W. Va., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed July 23, 1970, Ser. No. 57,582

Int. Cl. C10b *57/00*

U.S. Cl. 201—17 **16 Claims**



This invention discloses an efficient economical continuous method of pyrolysing and desulfurizing agglomerative bituminous coal in a transport reactor to recover volatile hydrocarbons and hydrogen by heating the particulate coal and char having particle sizes of less than 65 microns entrained in an inert carrier gas having pyrolysis reactor residence times of under three seconds.

3,736,234

HIGH-PURITY DISTILLED WATER PRODUCING APPARATUS

Shiro Miyamoto, Amagasaki, Japan, assignor to Toshin Industrial Machine Co., Ltd., Osaka, Japan

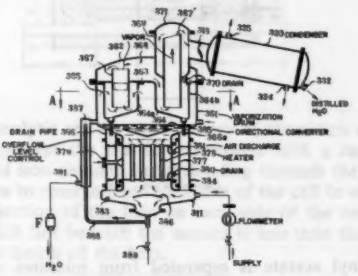
Filed Mar. 26, 1971, Ser. No. 128,309

Claims priority, application Japan, June 18, 1970, 45/60,561; Dec. 17, 1970, 45/127,209; Dec. 26, 1970, 45/126,250, 45/136,240

Int. Cl. B01d *3/00, 3/10, 3/14, 45/00, 39/06, 45/12;* F16t *1/00;* F22b *37/26*

U.S. Cl. 202—185 R **2 Claims**

The present invention relates to an improvement of an apparatus for producing high-purity distilled water which comprises a mist separator means mounted in a steam generator, a tubular member for introducing steam into a condenser, upper portion of said tubular member being adapted to heat-exchange said steam with liquid condensed at substantially high temperature and collected near the upper portion, at least one liquid receiving means arranged within the condenser for receiving required amount of the liquid, and at least one gas removing container means in which occluded gas is continuously evacuated by a gas aspirating means.



3,736,235

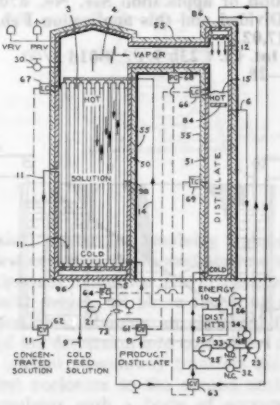
HEATER PUMPS FOR DISTILLAND HEATING WITH HOT DISTILLATE

Charles T. Sundquist, 12566 SE. 53rd, Bellevue, Wash. 98006

Filed Dec. 4, 1970, Ser. No. 95,053

Int. Cl. B01d *3/00, 3/08, 3/10*

U.S. Cl. 202—236 **1 Claim**



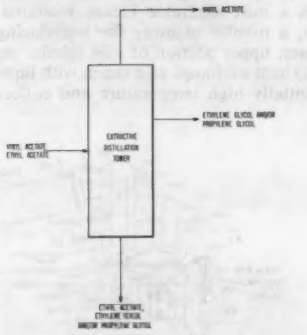
A pump pressurizes the heated hot sump distillate in the distillaiton process, distilland heating with hot distillate, thus leading to the reduction of overhead clearance requirements for the distiller.

3,736,236

METHOD OF SEPARATING VINYL ACETATE FROM LIQUID MIXTURES BY EXTRACTIVE DISTILLATION WITH A GLYCOL

Lucio di Fiore, Milan, Claudio Divo, Saronno, and Marcello Ghirga, Bresso, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

Filed June 10, 1971, Ser. No. 151,948
Claims priority, application Italy, July 1, 1970, 26,852/70
Int. Cl. B01d *3/40*; C07c *67/06*
U.S. Cl. 203—51 7 Claims



Vinyl acetate is separated from mixtures with ethyl acetate by ethylene glycol and/or propylene glycol, introduced to a distillation column above the feed point of the mixture, and with a reflux ratio of 2 to 7 and a ratio vinyl acetate to glycol of 0.03:1 to 2:1.

ERRATUM

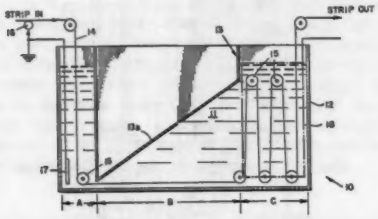
For Class 204—266 see:
Patent No. 3,736,322

3,736,237

CONTINUOUS FORMING OF ANODES FOR CAPACITORS

Milton Kallianides, 52 Gifford St., Brockton, Mass. 02401, and Gerhart P. Klein, 45 Raymond, Manchester, Mass. 01944

Application Dec. 10, 1969, Ser. No. 880,487, which is a continuation of application Ser. No. 670,723, Sept. 26, 1967. Divided and this application Feb. 19, 1971, Ser. No. 117,023
Int. Cl. C23b *9/02*; B01d *3/00*
U.S. Cl. 204—28 6 Claims



A method of forming an oxide film on metal strip comprising functionally dividing a tank containing a forming electrolyte into an entrance, a formation, and an aging section, and continuously passing a strip through the tank from the generation of an anodic oxide thereon.

3,736,238

PROCESS FOR THE RECOVERY OF METALS FROM SULFIDE ORES THROUGH ELECTROLYTIC DISSOCIATION OF THE SULFIDES

Paul R. Kruesi, Wheatridge, and Duane N. Goens, Golden, Colo., assignors to Cyprus Metallurgical Processes Corporation, Los Angeles, Calif.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,435
Int. Cl. C22d *1/10, 1/14, 1/16*
U.S. Cl. 204—105 R 37 Claims

A pollution-free process for the electrolytic dissociation of sulfide ores of the metals of Groups I–B, II–B, IV–A, V–A, VI–A and VIII of the Periodic Table in aqueous acidic media with the formation of metal ions and elemental sulfur followed by recovery of the metal ions from solution in the electrolyte media, the process characterized by certain process conditions, these being the use of:

(1) An electrolyte comprising a soluble metal chloride selected from the group consisting of soluble chlorides of aluminum, chromium, copper, iron, manganese, nickel, zinc and rare earth metals alone or mixed or in combination with alkali metal and/or alkaline earth metal chlorides, the electrolyte being at least .5 normal in chloride ion,

(2) A sulfide feed of average particle size smaller than about 60 mesh U.S. Standard,

(3) A pH range of up to about 3.9,

(4) An electrolyte temperature range between about 50° C.–105° C., and

(5) An anode current density above about 12 ampere/ft.^{2}.

3,736,239

NEUTRALIZATION OF METAL CONTAINING WASTES

Lawrence C. George and Lee N. Ballard, Rolla, and Vernon H. Feeler, Vienna, Mo., assignors to the United States of America as represented by the Secretary of the Interior

Filed Mar. 18, 1971, Ser. No. 125,573
Int. Cl. C22d *1/16*; C01c *3/08*
U.S. Cl. 204—108 10 Claims

A cyanide and metal-containing liquid waste stream is treated by addition of a second liquid waste stream which contains acids and dissolved metals. Free cyanide ions are quantitatively removed from the wastes by precipitation as metal cyanides at neutral to slightly acid conditions.

3,736,240

POST-CHLORINATED VINYL CHLORIDE RESIN AND PROCESS THEREFOR USING RADIATION

Lester Weintraub, Livingston, N.J., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,041
Int. Cl. B01j *1/10, 1/12*
U.S. Cl. 204—159.18 11 Claims

Post-chlorinated polyvinyl chloride resin having high thermal stability, heat deflection temperature and impact strength, together with an adequate melt flow rate, is prepared by chlorinating vinyl chloride homopolymer or vinyl chloride-ethylene or propylene interpolymer, while irradiated with ultraviolet light in a chloroform solution, to a chlorine content of at least about 65 weight percent.

3,736,241

POLYMERIZATION OF ACRYLONITRILE

Ilie G. Murgulescu, Tatiana Oncescu, and Ion I. Vlagiu, Bucharest, Rumania, assignors to Ministerul Invatamintului, Bucharest, Rumania

No Drawing. Filed Apr. 22, 1970, Ser. No. 30,959
Claims priority, application Rumania, Jan. 4, 1968, 55,558
Int. Cl. C08f *1/16*
U.S. Cl. 204—159.22 9 Claims

The radiochemical polymerization of acrylonitrile. Such polymerization can be carried out (a) in dimethylsulfox-

ide, (b) with dimethylsulfoxide in the presence of vinylic monomers and carboxylic groups, or (c) with dimethylsulfoxide in the presence of the oxalic complex manganese diaquodioxolate potassium) generating the oxalic radical. One obtains polymers with good tinctorial qualities, pure and stable under heat and light. The reaction time is four times smaller than for the classical synthesis of this type of polymers. The apparatus required is simple, thereby offering an increased economic advantage. The solution of polymers produced in accordance with the invention may be used, for example, for the spinning of acrylonitrile fibers.

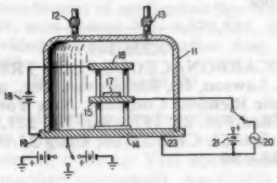
3,736,242
SPUTTERING TECHNIQUE

Newton Schwartz, Morris Township, Morris County, and Frederick Vratny, Berkeley Heights, N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Application Jan. 31, 1968, Ser. No. 701,964, now Patent No. 3,589,994, which is a continuation-in-part of abandoned application Ser. No. 372,537, June 4, 1964. Divided and this application Dec. 4, 1970, Ser. No. 95,144

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **1 Claim**



The electrical and physical properties of cathodically sputtered films may be controlled by utilizing alternatively, electron negative ion, and positive ion bombardment of substrate surfaces during the course of the sputtering process.

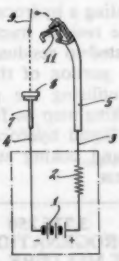
3,736,243
CORROSION PROTECTED RAZOR BLADE

Jeremiah J. Duggan, Madison, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed May 18, 1971, Ser. No. 144,511

Int. Cl. C23f *13/00*

U.S. Cl. 204—196 **3 Claims**



A razor blade and holder combination is protected from corrosion by the application of appropriate electrical potential. The electrical circuit comprises a battery connected through a resistor for determining the desired current to the frame of the razor. A second connection is made to a separate electrode placed near the blade seat of the razor. The circuit is rendered operable by the action of the electrolyte solution normally present during use of the razor-blade combination.

3,736,244
ELECTROLYTIC CELLS FOR THE PRODUCTION OF ALUMINUM

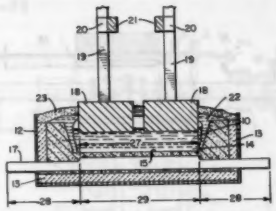
Hans Bohner, Fehraltorf, and Wolfgang Schmidt-Hatting, Chippis, Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Apr. 30, 1971, Ser. No. 139,154

Claims priority, application Switzerland, May 1, 1970, 6,582/70

Int. Cl. C22d *3/02;* **B01k** *3/04*

U.S. Cl. 204—243 R **2 Claims**



An electrolytic cell for the recovery of aluminum comprising a pot for the fluoride electrolyte with a carbon bottom and iron cathode bars extending through the carbon bottom to emerge from each side of the cell in which the cross section of the bars on each side of the central length which lies beneath the anodes is less than that of the central length of the bars.

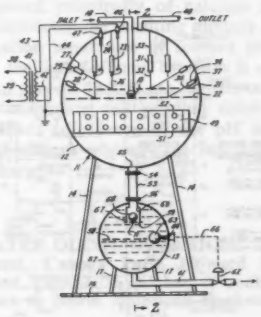
3,736,245
SHIPBOARD ELECTRICAL TREATER

Frederick D. Watson and Howell R. Jarvis, Houston, Tex., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Aug. 31, 1971, Ser. No. 176,465

Int. Cl. B01d *13/02;* **B03c** *5/02*

U.S. Cl. 204—302 **20 Claims**

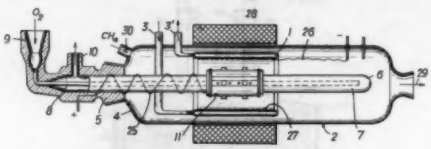


An electrical treater for resolving water-in-oil dispersions in a first enclosure positioned above a second enclosure in a shipboard mounting. The first enclosure contains dispersion inlet means, oil phase removing means and a coalescing section containing an electrical field to effect separation of the dispersion into continuous oil and water phases. An upright passageway transfers the water phase from the first enclosure to the second enclosure into a water accumulator with a body of accumulated water being maintained below the upright passageway. Flow control means associated with the upright passageway provide for relatively unobstructed downward flow and restricted upward flow of the water phase between the first and second enclosures.

3,736,246
APPARATUS FOR THE PREPARATION AND TREATMENT OF THIN LAYERS

Fritz Grasenick, 19 Schuchardtstrasse, Graz, Austria

Continuation-in-part of application Ser. No. 778,908, Oct. 25, 1968, which is a continuation-in-part of application Ser. No. 481,556, Aug. 23, 1965, both now abandoned. This application Nov. 4, 1971, Ser. No. 195,792
Claims priority, application Austria, Aug. 25, 1964, 7,362/64
Int. Cl. C23c *15/00*; B01k *1/00*
U.S. Cl. 204—298 7 Claims

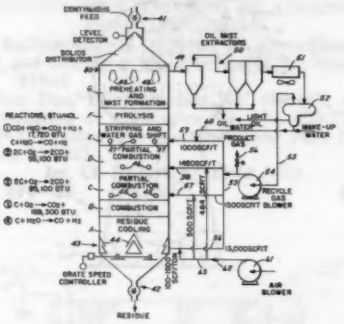


A device for the production and treatment of thin layers on objects by means of electric gas discharges within an evacuable container comprising a coolable or heatable coaxial carrier tube mounted within a cooled double-walled hollow cylinder, an object carrier arranged slidable and fixable on said carrier tube, means for maintaining an electric gas discharge, means for the production of a magnetic field within the container and means to induce treatment and cooling media into the container.

3,736,247
RETORTING OF SOLID CARBONACEOUS MATERIAL

John B. Jones, Jr., and Adam A. Reeves, Denver, Colo., assignors to Paraho Corporation, Boulder, Colo.

Filed Nov. 1, 1971, Ser. No. 194,455
Int. Cl. C10b *53/06*
U.S. Cl. 208—11 17 Claims

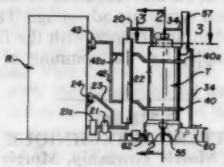


A process for the destructive distillation of the organic material in solid hydrocarbonaceous material in shaft vessels having a pulverulent solid moved downwardly in a continuous column through successive zones of preheat, destructive distillation, residue stripping, and water-gas shift, controlled combustion of carbonaceous residue at one or more levels of injection of an oxygeneous gas, and finally cooling and withdrawing the solid through a heat recovery zone. The gas stream leaving the top of the vessel is only slightly above the temperature of the entering hydrocarbonaceous material, generally providing a mist of oil droplets entrained in the gas stream.

3,736,248
METHOD FOR THE MANUFACTURE OF COKE

George Richard Hussong, Godfrey, Ill. 62035

Continuation of application Ser. No. 741,749, July 1, 1968. This application May 25, 1972, Ser. No. 257,003
Int. Cl. C10g *9/42*
U.S. Cl. 208—46 4 Claims

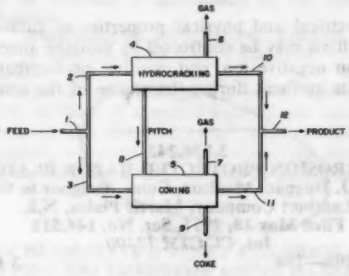


A method of and an apparatus for manufacturing coke from reduced crude oil wherein small drops of oil fall through a vertical chamber forming a tall, heated tower. This chamber is maintained at coking temperature, and thus, the volatile constituents in the oil drops vaporize while the remainder is coked during the fall. The vapors are removed from the tower through side outlets and the coke is collected at the base of the tower in a pond or in a funnel.

3,736,249
HYDROCARBONACEOUS FEED TREATMENT

John E. Lawson, Jr., Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,949
Int. Cl. C10b *55/00*; C10g *23/02*
U.S. Cl. 208—80 12 Claims



A method for treating a hydrocarbonaceous feed which contains at least one residue fraction wherein a portion of the feed is subjected to residual hydrocracking conditions while another portion of the feed is subjected to coking conditions, utilizing the pitch residue obtained from the hydrocracking step as feed to the coking step and combining the liquid hydrocarbonaceous output of the hydrocracking and coking steps to form the final product of the process.

3,736,250
CATALYTIC HYDROGENATION USING KCl-$ZnCl_2$ MOLTEN SALT MIXTURE AS A CATALYST

Lloyd Berg, Bozeman, Mont., and John S. Malsam, St. Paul, Minn., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Nov. 17, 1971, Ser. No. 199,764
Int. Cl. C10g *13/08, 29/12*
U.S. Cl. 208—10 6 Claims

KCl is incorporated with molten $ZnCl_2$ catalyst in a coal or coal extract hydrocracking zone so that any reaction product and unreacted feedstock entrained in the catalyst can be separated from spent catalyst in a simple gravity separation vessel.

3,736,251
HYDROTREATING HYDROCARBONS WITH A Pt-Ge-Re-CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application Sept. 5, 1969, Ser. No. 855,725, which is a continuation-in-part of application Ser. No. 839,086, July 3, 1969. Divided and this application May 10, 1971, Ser. No. 142,080

Int. Cl. C10g *23/04*

U.S. Cl. 208—143 6 Claims

A process for hydrotreating hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a rhenium component, a germanium component and a Group VIII noble metal component. Applicable to processing charge stocks containing sulfurous compounds and aromatic hydrocarbons, the hydrotreating conditions can be controlled to effect a particular end result including the ring-opening of cyclic hydrocarbons for producing jet fuel components, desulfurization, denitrification, selective olefin saturation, etc.

3,736,252
HYDROTREATING OF HYDROCARBONS

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Application July 7, 1969, Ser. No. 839,643, now Patent No. 3,607,727, dated Sept. 21, 1971, which is a continuation-in-part of application Ser. No. 828,762, May 28, 1969, now Patent No. 3,578,584, dated May 11, 1971. Divided and this application Aug. 17, 1970, Ser. No. 64,643

Int. Cl. C10g *23/02*

U.S. Cl. 208—255 3 Claims

A process for hydrotreating hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a Group VIII noble metal component and a germanium component. Applicable to charge stocks containing sulfurous compounds and aromatic hydrocarbons, the hydrotreating conditions can be controlled to effect a particular end result including the ring-opening of cyclic hydrocarbons, desulfurization, denitrification, selective olefin saturation, etc.

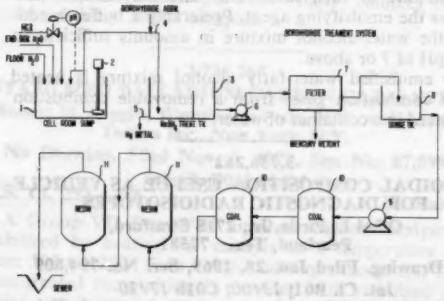
3,736,253
PROCESS AND APPARATUS FOR REMOVING MERCURY FROM WASTE WATER

Peter De Angelis and Alfred R. Morris, Brewer, and Alan L. MacMillan, Belfast, Maine, assignors to Sobin Chlor-Alkali, Inc., Orrington, Maine

Filed Apr. 10, 1972, Ser. No. 242,326

Int. Cl. B01j *1/22*; C02b *1/14*

U.S. Cl. 210—27 14 Claims



A method for removing mercury from water contaminated with mercury comprising contacting water containing metallic mercury with finely divided anthracite coal. The mercury laden water can be first treated with sodium borohydride to reduce dissolved mercury to the metallic form. The water treated with reducing agent, is filtered through a pressure leaf filter coated with a filter aid, contacted with anthracite coal and contacted with chelating resin.

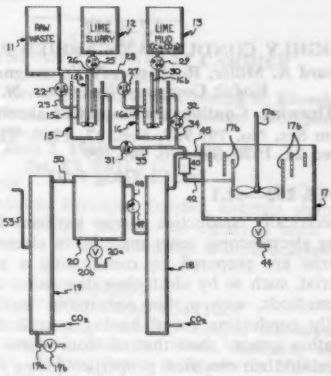
3,736,254
SYSTEM FOR REMOVING COLOR FROM PAPER MILL LIQUID WASTE

Hardy C. Croom, Valdosta, Ga., assignor to Owens-Illinois, Inc.

Filed June 3, 1971, Ser. No. 149,534

Int. Cl. C02c *5/02*

U.S. Cl. 210—51 7 Claims



Waste effluent liquid from a paper mill is intimately mixed with a water slurry of lime and a water slurry of lime mud, composed principally of calcium carbonate, under alkaline conditions; the resulting mixture being subjected to clarification separation of formed precipitants; following which, the liquid effluent overflow is carbonated by the bubbling of carbon dioxide gas therethrough to precipitate calcium carbonate and residual color-imparting entities and to effect adjustment of the pH to approximately neutral conditions whereby the resultant liquid is adapted for discharge.

3,736,255
WATER DECOLORIZATION

Masood Ghassemi, Canoga Park, Howard L. Recht, Northridge, and Eugene V. Kleber, Woodland Hills, Calif., assignors to North American Rockwell Corporation

No Drawing. Filed Oct. 1, 1970, Ser. No. 77,391

Int. Cl. C02c *5/02*

U.S. Cl. 210—45 15 Claims

A method is provided for chemically removing coloring matter from water by treating the coloring matter-containing water with a trivalent rare earth salt, generally as a mixture of such salts, to form an insoluble rare earth precipitate and then separating the precipitate from the water. The rare earth precipitant salt, such as lanthanum chloride or lanthanum sulfate, may be regenerated by first heating the rare earth precipitate to form rare earth oxides and to drive off the organic components by converting them to carbon dioxide and water. The rare earth oxide may be used directly in acidic waters or converted to a soluble rare earth salt by using acid such as dilute hydrochloric or sulfuric acid.

3,736,256

NITRITE CONTAINING CORROSION-INHIBITING GREASE COMPOSITIONS

Edward Albert Cross, Houston, Tex., and Frederic Charles McCoy, Beacon, and Raymond Charles Schlicht, Fishkill, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Dec. 29, 1970, Ser. No. 102,550

Int. Cl. C10m *3/18;* C09k *3/00*

U.S. Cl. 252—18 12 Claims

This invention concerns synergestic combinations of inorganic nitrites and certain amines which when incorporated into alkali-metal soap and/or alkaline earth metal soap based greases inhibit corrosion.

3,736,257

HIGHLY CONDUCTIVE CARRIER PARTICLES

Howard A. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 799,967, Feb. 17, 1969. This application Dec. 21, 1970, Ser. No. 100,299

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 16 Claims

Electrically conductive carrier particles for use in applying electroscopic toner material to electrostatic charge patterns are prepared by overcoating a magnetic core material, such as by electroless deposition or electroplating methods, with a thin continuous layer of an electrically conducting metal having a resistance to aerial oxidation greater than that of iron. These carrier particles retain their electrical properties during repeated usage and are highly abrasion resistant.

3,736,258

THERMAL CONDITIONING OF "HYDROX" COMPOSITIONS

Allen A. Duswalt, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 4, 1971, Ser. No. 149,978

Int. Cl. C06b *19/06;* C06d *5/06*

U.S. Cl. 252—184 9 Claims

A process for improving the stability of a gas generating composition comprised of an alkali metal nitrite, ammonium salt, and magnesium oxide or other basic stabilizing agent. The gas generating composition is stabilized by heating the composition at an elevated temperature until the measured rate of decomposition of the composition at the heating temperature becomes constant. When the rate of decomposition is constant, heating is stopped. The resulting composition is a heat stabilized gas generating composition.

3,736,259

CLEANING COMPOSITIONS AND METHOD

Charles Edward Buck, Caldwell, and Victor Earl Sheaffer, Glen Gardner, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 20,398, Mar. 17, 1970. This application July 9, 1971, Ser. No. 161,276

Int. Cl. C11d *7/50*

U.S. Cl. 252—89 8 Claims

A cleaning composition for shampooing carpets including water, a detergent and an aliphatic C_{14}–C_{20} fatty alcohol, finely divided silica, and a water-soluble alkali metal phosphate or borax or a mixture thereof for retarding the formation of sediment.

3,736,260

ANAEROBIC COMPOSITION IN AEROSOL FORM

Denis J. O'Sullivan, Sutton, Dublin, and Bernard J. Bolger, Foxrock, Dublin, Ireland, assignors to Loctite (Ireland), Limited, Dublin, Ireland

No Drawing. Filed June 8, 1971, Ser. No. 150,937

Claims priority, application Ireland, June 25, 1970, 829/70

Int. Cl. C09k *3/30*

U.S. Cl. 252—188.3 R 10 Claims

Polymerizable anaerobic compositions are packaged in aerosol containers, pressurized with a propellant containing oxygen as one component. The compositions remain stable and usable for periods of six months or longer.

3,736,261

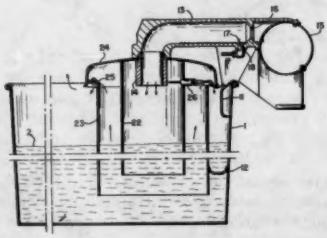
METHOD FOR THE PRODUCTION OF STABLE WATER FOGS USING AN EMULSIFIED WATER-EVAPORATION RETARDING CHEMICAL MIXTURE

Egil K. Bjornerud and Glenn L. Keister, Seattle, Wash., assignors to Applied Technology Corporation, Seattle, Wash.

Filed Dec. 12, 1969, Ser. No. 884,560

Int. Cl. C09k *3/30*

U.S. Cl. 252—305 16 Claims



Stable water fogs are made by heating an emulsified mixture of two immiscible liquids, water and a long-chain monohydric fatty alcohol above the melting point of the fatty alcohol. The water and fatty alcohol evaporate at a rate proportional to their respective vapor pressures at the temperature to which the mixture is heated. The emulsifier may be an anionic, cationic, or non-ionic surfactant or a mixture of such surfactants. Electrolytes may also serve as the emulsifying agent. Preferably a buffer is added to the water-alcohol mixture in amounts sufficient to give a pH of 7 or above.

The emulsified water-fatty alcohol mixture is heated by hot combustion gases from a removable combustion unit placed in a container of water.

3,736,262

COLLOIDAL COMPOSITION USEFUL AS VEHICLE FOR DIAGNOSTIC RADIOISOTOPES

Othel L. Pirtle, Jr., 2718 Stratford, Pearland, Tex. 77581

No Drawing. Filed Jan. 28, 1969, Ser. No. 794,809

Int. Cl. B01j *13/00;* C01b *17/10*

U.S. Cl. 252—313 R 8 Claims

A composition useful as a vehicle for diagnostic radioisotopes which comprises the colloidal composition resulting from mixing at elevated temperatures, water, an antimony salt of a polyhydroxy acid and ammonium sulfide. The diagnostic radioisotope is dispersed in the colloidal composition and adsorbed by the particles of such colloidal composition.

3,736,263

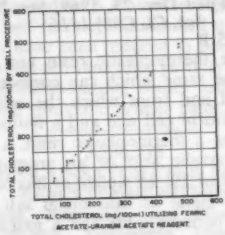
REAGENT FOR DETERMINING CHOLESTEROL

Amritlal C. Parekh and David H. Jung, Indianapolis, Ind., assignors to Research Corporation, New York, N.Y.

Original application Feb. 5, 1970, Ser. No. 8,954. Divided and this application May 13, 1971, Ser. No. 143,264

Int. Cl. G01n *33/16*

U.S. Cl. 252—408 1 Claim



A reagent for producing a color forming reaction with solubilized cholesterol comprising a mixture of ferrous sulfate and sulfuric acid and, optionally, acetic acid.

3,736,264

CATALYST COMPOSITION AND THE PROCESS FOR POLYMERIZING UNSATURATED HYDROCARBONS USING THIS COMPOSITION

Yves Chauvin, Saint Germain-en-Laye, France, assignor to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, and Societe Nationale des Petroles d'Aquitaine, Tour Aquitaine, Courbevoie, France

No Drawing. Filed June 26, 1970, Ser. No. 50,337

Claims priority, application France, July 2, 1969, 22,453; Nov. 25, 1969, 40,688

Int. Cl. C07c *3/10*

U.S. Cl. 252—429 R 15 Claims

This invention relates to new catalyst compositions which may be used for polymerizing unsaturated compounds. They comprise a flouride of a Group V–A, V–B or VI–B element together with a nickel organo compound, for example a zerovalent nickel compound, a nickel-phosphine complex, a π-allyl nickel complex or a cyclopentadienyl nickel complex.

3,736,265

STABILIZED PALLADIUM-CARBON CATALYSTS

Robert M. Suggitt, Wappingers Falls, N.Y., assignor to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 6, 1970, Ser. No. 87,599

Int. Cl. B01j *11/06*

U.S. Cl. 252—445 16 Claims

A Group VII–B or VIII metal on carbon catalyst is stabilized by heating the catalyst at a temperature of from 500 to 1200° F. in a non-oxidizing atmosphere. The heat treated composition is provided with stabilized activity and improved crush strength in low temperature catalytic reactions involving the reduction of nitrated or oxygenated hydrocarbons to amines and alcohols where copious amounts of by-product water is formed and is particularly suited for utilization as a hydrogenation catalyst such as in the selective conversion of mononitroparaffins to secondary alkyl primary amines.

3,736,266

PREPARATION OF CARBON SUPPORTED PALLADIUM CATALYSTS

Albert Schrage, East Orange, N.J., assignor to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,944

Int. Cl. B01j *11/06*

U.S. Cl. 252—447 9 Claims

Palladium on carbon hydrogenation catalysts having increased activity may be prepared by adding a basic compound to a solution of a soluble palladium compound in the presence of finely divided carbon wherein the basic compound is uniformly added at such a rate that the pH of the solution, which is initially in the range of 0 to 3, rises to at least about 12 in a period of one-half to one hour, and then reducing the precipitated palladium to metallic palladium.

3,736,267

CATALYST AND CATALYST CARRIER COMPOSITION

Ronald K. Bart, Sterling Junction, and Joseph R. Klovsky, Worcester, Mass., assignors to Norton Company, Worcester, Mass.

Filed June 2, 1969, Ser. No. 829,323

Int. Cl. B01j *11/22*

U.S. Cl. 252—466 2 Claims

Spinel and calcium zirconate bonded zirconia shapes are an improved catalyst carrier for catalysts such as Co—CoO for use in steam reforming of hydrocarbons.

3,736,268

ANTISTATIC COMPOSITION

Teiji Habu and Kyusaku Yoshida, Tokyo, Katsutoshi Machida, Sagamihara, Natsuko Wada, Kodaira, and Masao Ishihara, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

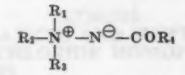
No Drawing. Filed July 29, 1971, Ser. No. 167,472

Claims priority, application Japan, Aug. 5, 1970, 45/67,989

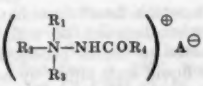
Int. Cl. H01b *1/06;* G03c *1/82*

U.S. Cl. 252—500 7 Claims

An antistatic composition which comprises a protective colloid solution and, dispersed therein, a solution prepared by dissolving in a substantially water-insoluble organic solvent lower in specific gravity than the protective colloid, an antistatic agent of the Formula I or II,



(I)



(II)

wherein R_1, R_2 and R_3 are individually an alkyl group or an aralkyl group; R_4 is an alkyl group, an aryl group or a hetero ring; and A is XO_4, X or BX_4, where X is a halogen atom.

The composition is particularly suitable for use in photographic materials.

3,736,269

SOLID COMPOUND OF RHODIUM AND TELLURIUM AND MANUFACTURING PROCESS THEREFOR

Louis Degueldre and Yves Gobillon, Brussels, Lucien, Clerbois, Vilvoorde, and Louis Bourgeois, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed July 29, 1971, Ser. No. 167,516

Claims priority, application Belgium, July 29, 1970, 61,434

Int. Cl. H01b *1/08;* C01b *19/00;* C01g *55/00*

U.S. Cl. 252—518 3 Claims

Rh_2TeO_6 crystallized in the tetragonal system under the trirutile form, the parameters a_o and c_o being 4.54

and 9.245 A., respectively, having an electrical conductivity of 10^{-4} (ohm·cm.)$^{-1}$ and an energy gap of 0.04 ev.

3,736,270
SOLID COMPOUND OF RHODIUM AND TUNGSTEN AND MANUFACTURING PROCESS THEREFOR

Louis Degueldre and Yves Gobillon, Brussels, Lucien Clerbois, Vilvoorde, and Louis Bourgeois, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

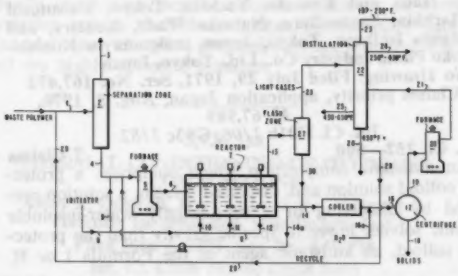
No Drawing. Filed July 29, 1971, Ser. No. 167,517
Claims priority, application Belgium, July 29, 1970, 61,435
Int. Cl. C01g *41/00, 55/00;* H01b *1/08*
U.S. Cl. 252—518 **3 Claims**

Rh_2WO_8 crystallized in the tetragonal system under the trirutile form, the parameters a_0 and c_0 being 4.609 and 9.083 A. respectively, having an electrical conductivity of 10^{-4} (ohm·cm.)$^{-1}$ and energy gap of 0.03 e.v.

3,736,271
CONVERSION OF WASTE POLYMERS TO USEFUL PRODUCTS

Henry G. Schutze and James A. Dinwiddie, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Dec. 24, 1970, Ser. No. 101,227
Int. Cl. C08f *47/24*
U.S. Cl. 260—2.3 **13 Claims**



Waste polymers which heretofore have been buried, burned, or otherwise disposed of with effects on the ecology are converted to useful products by converting the polymer into a liquid state either by heating the polymer to a temperature above its melting point or dissolving the polymer in a suitable solvent and then initiating a free radical decomposition reaction by the addition of a suitable initiator. Inorganic materials in the polymer are removed while the polymer is in the liquid state by centrifugation, settling, filtration or solvent washing.

3,736,272
LOW-DENSITY, FREEZE-RESISTANT POLYURETHANE FOAMS

Paul R. Mosso, Natrona Heights, and James F. Foote, Sarver, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,525
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 BB **19 Claims**

This invention relates to low density polyurethane foams which have good freeze resistance with good K factor and K factor stability, even at a low packing factor. These results were obtained by adding aluminum (hydroxystearate) salts to the polyurethane foam formulation. The invention also relates to stable compatible premixes of aminic polyols and the aluminum (hydroxystearate) salts which have good aging characteristics and can be utilized to form the polyurethane foams of the invention.

3,736,273
METHOD OF MAKING AN EXPANDABLE THERMOPLASTIC RESIN

Itaru Hatano, Kobe, and Hiroji Tsukamoto, Osaka, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,871
Int. Cl. C08j *1/16*
U.S. Cl. 260—2.5 B **5 Claims**

An expandable thermoplastic resin and a method of manufacturing the same which can considerably shorten the curing period and from which the cellular material foamed has a uniform cell size and a uniform cell distribution, comprising a thermoplastic resin, a metal salt of an aliphatic carboxylic acid or an aromatic carboxylic acid in an amount of 2% by weight or less of said thermoplastic resin, the metal of said metal salt belonging to Group II of the periodic table and a gaseous expanding agent.

3,736,274
DENTURE ADHESIVE

Daniel Schoenholz, Basking Ridge, N.J., and Martin M. Perl, Brooklyn, N.Y., assignors to Foremost-McKesson, Inc., New York, N.Y.

No Drawing. Filed June 1, 1971, Ser. No. 149,078
Int. Cl. C08b *21/32*
U.S. Cl. 260—17 R **4 Claims**

An effective denture composition is disclosed which comprises a maleic anhydride and/or acid copolymer, a polymeric N-vinyl lactam and sodium carboxymethylcellulose.

3,736,275
PROCESS FOR THE PRODUCTION OF PARTICLE BOARD USING CROSS-LINKED XANTHOMONAS COLLOID IN THE GLUE MIXTURE

Nicholas J. Iammarino, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,196
Int. Cl. C08g *51/18*
U.S. Cl. 260—17.3 **7 Claims**

A process for producing particle board in which a Xanthomonas hydrophilic colloid and a cross-linking agent for said colloid are added to the glue mix. The glue mix is then sprayed onto wood chips which are compressed and heated to form the finished board. By use of the Xanthomonas colloid and the cross-linking agent, the amount of glue required for formation of the particle board is reduced.

3,736,276
ELECTROCOATING BATH COMPOSITIONS

Francis Raymond Crowne, Oakville, Ontario, Canada, and Vladimir Peer, Bloomfield, N.J., assignors to Canada Wire and Cable Company Limited, Toronto, Ontario, Canada

Filed Nov. 6, 1970, Ser. No. 87,648
Int. Cl. C08g *5/21*
U.S. Cl. 260—19 EP **4 Claims**

An electrocoating bath composition comprises a diluted aqueous solution or dispersion of a heat curable coating resin, suitably an epoxy ester resin, and a minor amount of water soluble, compatible resin which cures rapidly at temperatures substantially below the curing temperature of the coating resin, for example a water soluble phenolic resin, to improve the edge and corner coverage of objects coated by the composition.

3,736,277

METHOD OF RECLAIMING PRIMER PAINT OVERSPRAY SLUDGE

Howard S. Bender, Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,203

Int. Cl. B29h *19/00*; C08f *47/24*; C08g *53/22*

U.S. Cl. 260—22 EP 3 Claims

Primer paint overspray sludge is washed, dried and its thermosetting resin binder fully cured. The dry solids are ground to form filler particles of 200 mesh or smaller. They are then mixed with a viscous liquid thermosetting grinding resin and further comminuted until at least 90% of the particles have been reduced to one to five microns. This grinding resin-ultrafine filler particle mixture is mixed with additional thermosetting binder resin and solvent to obtain a suitable sprayable primer paint.

3,736,278

NIL SHRINK UNSATURATED POLYESTER RESIN COMPOSITION

Moriyasu Wada, Ninomiya, and Hiroshi Enoki and Katsuya Kumagai, Yokohama, Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Japan

Filed Dec. 22, 1971, Ser. No. 210,829

Claims priority, application Japan, Dec. 23, 1970, 45/115,818

Int. Cl. C08g *17/00, 17/04*

U.S. Cl. 260—22 CB 5 Claims

A nil shrink or low profile unsaturated polyester resin composition has been formed by blending (A) 5–20% by weight of a saturated polyester resin produced by the reaction of an alcohol component containing 20–80 mol percent of neopentyl glycol, and an acid component containing 70–95 mol percent terephthalic acid and/or isophthalic acid, (B) 25–60% by weight of an unsaturated polyester resin containing a double bond equivalency of 142–165, produced by the reaction of an acid component containing maleic acid, maleic acid anhydride and/or fumaric acid, and an alcohol component, and (C) 60–30% by weight of an unsaturated monomer copolymerizable with the above-mentioned unsaturated polyester resin (B).

The saturated polyester resin composition is characterized by nil shrink (e.g., low extent of volume shrinkage during curing), good dimensional stability, high dimensional accuracy, crack and craze resistance and good electrical properties over varying temperatures.

3,736,279

STABLE NONAQUEOUS COMPOSITIONS CAPABLE OF FORMING THERMOSETTING FILMS

Melville J. Camelon, Utica, Stephen C. Peng, Rochester, and David M. Thomson, Warren, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Continuation-in-part of application Ser. No. 82,131, Oct. 19, 1970. This application Apr. 3, 1972, Ser. No. 240,790

Int. Cl. C08f *47/20*; C09d *3/48, 3/76*

U.S. Cl. 260—21 16 Claims

A copolymer is dissolved in a nonaqueous dispersion consisting essentialy of active ethenic monomers copolymerized in the presence of an alkylated amino resin. Active ethenic monomers of the dispersion are free of functional hydroxy groups and at least one has a functional epoxy group. The copolymer has functional groups capable of reacting with the alkylated amino resin and the epoxy groups during final film curing. Conventional techniques are used to apply the mixture to vehicle bodies which then are heated to drive off the dispersion medium and solvent and cure the remaining ingredients into a glossy, durable thermosetting film.

3,736,280

FUNGICIDAL COMPOSITIONS AND METHODS OF PROHIBITING THE GROWTH THEREOF

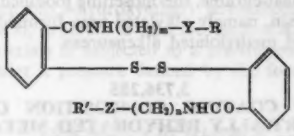
John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Original application Oct. 13, 1969, Ser. No. 865,977, now Patent No. 3,663,616, dated May 16, 1972. Divided and this application June 1, 1971, Ser. No. 149,028

Int. Cl. C09d *5/14*

U.S. Cl. 260—22 A 6 Claims

Bis (2-carbamylphenyl) disulfides are effective in controlling mildew fungi, especially *Pullularia pullulans* and can be incorporated in organic coating compositions. About 0.5–1% concentration in paint provides protection against mildew. The fungicidal compounds correspond to the structural formula:



where R and R′ are selected from hydrogen and methyl, *m* and *n* are 2 or 3 and Y and Z are O or S.

3,736,281

METHOD OF MAKING PRESSURE-SENSITIVE HOT-MELT ADHESIVES

Thomas E. Russell, Verona, N.J., assignor to The Flintkote Company, White Plains, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 739,626, June 25, 1968. This application Mar. 24, 1971, Ser. No. 127,795

Int. Cl. C09j *3/26*

U.S. Cl. 260—27 R 7 Claims

A pressure-sensitive adhesive composition having instant room temperature tack, good cold flow resistance and good shear strength which comprises as a first component a modified or unmodified rosin or rosin ester, as a second component a resinous rubbery block copolymer of styrene and butadiene or isoprene, and as a third component a polyterpene resin.

3,736,282

POLYMERIC LATICES AND SUSPENSIONS BASED ON VINYL CHLORIDE HOMOPOLYMERS AND COPOLYMERS

Edward Joseph Fetter, Stamford, and Frederick Lyle Andrew, West Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed June 4, 1971, Ser. No. 150,165

Int. Cl. C08f *45/46*

U.S. Cl. 260—29.6 MQ 3 Claims

Disodium isodecylsulfocuccinate is an unusually good surfactant for emulsion polymerization of vinyl chloride. It is also useful for emulsion polymerization of vinylidene chloride and for suspension polymerization of vinyl chloride.

3,736,283

WATER-BASED ADHESIVE FROM VINYL ACETATE-ETHYLENE COPOLYMER EMULSION CONTAINING MERCAPTO ALKYL SILANE

Howard H. Taylor, Jr., Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,164

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 MQ 2 Claims

Water-based adhesive compositions of a latex emulsion of a copolymer of ethylene and vinyl acetate are described. The compositions have increased adhesion to plastics, metals, textile, paper, etc. and comprise a latex emulsion of a copolymer of ethylene and vinyl acetate

containing from 5 to 40 weight percent ethylene and, by weight of the composition from 0.05 to 2% of a mercapto silane which is preferably a mercaptoalkyl trialkoxysilane.

3,736,284

METAL COATING COMPOSITIONS PREPARED FROM AQUEOUS DISPERSIONS OF A CARBOXYL CONTAINING OLEFIN COPOLYMER AND A MODIFIED UREA FORMALDEHYDE RESIN

Chester W. Fitko, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed June 19, 1972, Ser. No. 264,125
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.4 UA 8 Claims

Metal surfaces are coated with an aqueous dispersion of a water dispersible carboxyl containing olefin copolymer and a heat-curable, thermosetting modified urea formaldehyde resin, namely alkylated urea formaldehyde condensates and methylolated alkeneureas.

3,736,285

AQUEOUS COATING COMPOSITION CONTAINING PARTIALLY REHYDRATED METAKAOLIN PIGMENT AND NEUTRAL LATEX

Barry S. Miller, Roselle, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Woodbridge Township, N.J.

No Drawing. Continuation-in-part of application Ser. No. 723,602, Apr. 23, 1968. This application Nov. 12, 1970, Ser. No. 89,082
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 R 1 Claim

Ammonia is employed to impart a basic pH and to disperse an aqueous suspension of a normally acidic, adsorptive dye-sensitive pigment during the preparation of an aqueous coating composition containing the pigment. Sheets coated with the ammonia-treated coating composition are used as receiving sheets for printing with transfer sheets containing encapsulated color-reactant dye material.

3,736,286

AQUEOUS PIGMENTED ACRYLIC DISPERSION COMPOSITIONS HAVING IMPROVED RHEOLOGY

Joseph David Scott, Philadelphia, and Gabriel L. De Tommaso, Lansdale, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed June 30, 1971, Ser. No. 158,524
Int. Cl. C08f *29/46*
U.S. Cl. 260—29.6 RW 9 Claims

This invention is based on the discovery that an exceptionally good thickening effect is obtained in pigmented coating compositions, including water-base paints, the binder of which is a polymer of predominantly acrylic ester type, by the use of a water-soluble copolymer of N-vinylpyrrolidone (55–95%) and ethyl acrylate (45–5%).

3,736,287

AQUEOUS VINYL ACRYLIC INTERPOLYMER EMULSION AND USE THEREOF IN LATEX PAINTS

Ralph F. Patella, South Plainfield, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 78,255, Oct. 5, 1970. This application Feb. 19, 1971, Ser. No. 117,156
Int. Cl. C08f *45/24*; C09d *5/02*
U.S. Cl. 260—29.6 TA 13 Claims

An aqueous polymer emulsion derived from the interpolymerization of a short-chain alpha, beta-unsaturated mono- or polycarboxylic acid, acrylonitrile, a short-chain alpha, beta-unsaturated amide, an alkyl acrylate, and vinyl acetate or an alkyl methacrylate, when combined with a pigmentary material provides a latex paint which, when applied to a surface and cured, forms a coating exhibiting a high degree of burnish resistance, scrub resistance, ease of stain removal, and low temperature coalescence.

3,736,288

DRAG REDUCING FORMULATIONS

Julius J. Stratta, New City, Carl W. Frank, White Plains, and John A. Barrere, Jr., Valley Cottage, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 118,442, Feb. 24, 1971. This application July 9, 1971, Ser. No. 161,280
Int. Cl. C08g *51/34*
U.S. Cl. 260—33.4 R 10 Claims

This invention relates to improved hydrodynamic drag reducing formulations which comprise (a) particulate ethylene oxide polymer, (b) an inert, normally-liquid, water-miscible organic vehicle which is a non-solvent for said ethylene oxide polymer such as propylene glycol, (c) a suspending agent which is non-reactive with said ethylene oxide polymer and said organic vehicle such as colloidal silica, and (d) a surface active agent. The use of the surface active agent results in systems which are characterized by their improved handling characteristics such as fluidity, pumpability, and/or pourability. Though the viscosity of the system is significantly decreased, the hydrodynamic drag deduction efficiency characteristic remains practically unaffected. Moreover, at such decreased viscosity levels one can now increase, to a significant extent, the concentration of ethylene oxide polymer in the system and still maintain a viscosity level which is no greater than comparable systems formulated without a surface active agent.

3,736,289

STABILIZATION OF UNSATURATED POLYESTERS AND RESULTING PRODUCTS

Clifford D. Marshall, Cherry Hill, N.J., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed June 7, 1971, Ser. No. 150,736
Int. Cl. C08g *45/04*
U.S. Cl. 260—837 R 10 Claims

New compositions containing stabilized unsaturated polyesters are disclosed. These compositions comprise: (1) a hydroxy-containing ethylenically unsaturated polyester of a glycidyl polyether of a polyhydric phenol and an ethylenically unsaturated monocarboxylic acid; (2) a dissimilar ethylenically unsaturated monomer; and (3) a half ester of an aliphatic alcohol and a polycarboxylic acid or anhydride, e.g., a mono-alkyl maleate. Also disclosed is the use of the above stabilized polyesters containing a copolymerizable unsaturated monomer such as styrene in the preparation of laminates.

3,736,290

METHOD FOR MAKING POLYIMIDE BLOCK COPOLYMERS

William A. Fessler, Albany, N.Y., assignor to General Electric Company

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,965
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 E 5 Claims

A method is provided for making polyimide-organic block polymers, such as polyimide-polydiorganosiloxane block copolymers involving the reaction of bisimides and organo diamines in the presence of an organic solvent, such as hexamethylphosphorictriamide.

3,736,291

POLY(ARYLENE OXIDES)

Herward A. Vogel, 2501 Hudson Road, Oakdale Township, Washington County, Minn. 55101

No Drawing. Continuation of application Ser. No. 567,367, July 25, 1966, which is a continuation-in-part of application Ser. No. 269,140, Mar. 29, 1963, both now abandoned. This application Oct. 14, 1971, Ser. No. 189,137
Int. Cl. C07c *43/28*; C08g *23/00*
U.S. Cl. 260—47 R 9 Claims

Film and fiber forming poly(arylene oxides) are produced from monomers of the formula X—Ar—OH

wherein X is a halogen atom and Ar is a linear chain of from 2–10 unsubstituted phenylene groups bonded together directly or through ether oxygen. The monomer is converted to an alkali metal salt which is then heated in the presence of a copper catalyst.

3,736,292

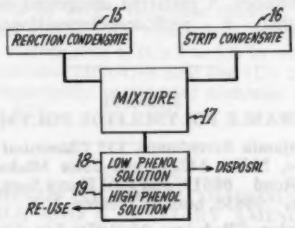
METHOD OF REDUCING PHENOLIC WASTE

James H. Thayer, Lanesboro, and Edward C. Y. Fan, Pittsfield, Mass., assignors to General Electric Company

Filed Mar. 29, 1971, Ser. No. 128,988

Int. Cl. C08g 5/06

U.S. Cl. 260—57 R 11 Claims



Phenol content is markedly reduced in waste discharged from apparatus used for producing phenol-aldehyde resins. Aqueous solutions produced by the reaction between the phenol and aldehyde at different stages of the reaction and containing different proportions of phenol are mixed together at a temperature in the range of about 30° C. to about 45° C. to provide rapid separation into two solution layers, of which one contains low phenol concentration and may be discharged as waste, and the other contains high phenol concentration which is returned to the reaction vessel for further use in resin production. The low phenol waste solution thus discharged enables a reduction in pollution of streams into which products of the resin process are usually discharged.

3,736,293

POLYETHERS CONTAINING REPEATING PERCHLOROAROMATIC UNITS

Ernest R. Novak, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation of abandoned application Ser. No. 41,063, May 27, 1970, which is a continuation-in-part of application Ser. No. 847,763, Aug. 5, 1969. This application Aug. 23, 1971, Ser. No. 174,225

Int. Cl. C08g 23/00

U.S. Cl. 260—61 12 Claims

Normally solid polyethers of the structure

$$\{Ar—A—Ar'—A'\}$$

wherein —A— and —A'— are —O— or —S—, —Ar— is a divalent perchlorinated aromatic group and —Ar'— is a divalent aromatic group. The process of producing the above polymers by reacting a compound of the formula Cl—Ar—Cl with a compound of the formula H—A—Ar'—A'—H at from 25 to 250° C. in the liquid phase and preferably in a solvent for one or both of the monomers.

3,736,294

POLY(ETHYLENE TEREPHTHALATE) FROM BIS (HYDROXYETHYL)TEREPHTHALATE AND TEREPHTHALIC ACID

Hidehiko Kobayashi, Kiichiro Sasaguri, Hiroshi Komoto, Sukeo Kawashima, and Mitsuo Kohno, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka City, Osaka Prefecture, Japan

Continuation-in-part of application Ser. No. 48,878, June 15, 1970, which is a continuation of application Ser. No. 698,412, Jan. 17, 1968. This application Sept. 13, 1971, Ser. No. 179,979

Claims priority, application Japan, Jan. 24, 1967, 42/4,484

Int. Cl. C08g 17/01

U.S. Cl. 260—75 M 7 Claims

Novel process for the preparation of fibre-forming polyethylene terephthalate containing no metal compound catalyst from bis(β-hydroxyethyl) terephthalate and terephthalic acid, wherein a specific ratio-mixture of the starting materials is subjected to a pre-treatment at 260–300° C. under a pressure defined by the formula

$$1 \leqq p \leqq \frac{1}{1.96} \times 10^{-3}(t-100)^2$$

wherein p represents the pressure of the reaction system (atm.) and t represents the temperature of the reaction system until an apparently uniform melt is formed and subsequently the pre-treated mixture is subject to a polycondensation, said pre-treatment and said polycondensation being carried out in the absence of any metal compound catalyst. The present process can produce fibre-forming polyethylene terephthalate which is as white as magnesium oxide and excellent in spinnability and dyeing properties in a reasonable polymerization reaction period, leading to great advantage from the industrial point of view.

3,736,295

POLYURETHANE ELASTOMERS FROM AROMATIC DIAMINES CONTAINING ETHER GROUPS

Walter Meckel, Dusseldorf, and Klaus Konig, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Nov. 6, 1969, Ser. No. 874,684, now Patent No. 3,654,364. Divided and this application Sept. 16, 1971, Ser. No. 181,224

Claims priority, application Germany, Nov. 15, 1968, P 18 09 172.0

Int. Cl. C08g 22/16

U.S. Cl. 260—75 NH 9 Claims

Novel aromatic diamines containing ether groups and having chlorine atoms in the o-position to the amino groups are useful to prepare polyurethane elastomers therefrom with an organic diisocyanate and an organic compound containing at least two hydroxyl groups and having a molecular weight of from about 800 to about 5000.

3,736,296

CHAIN EXTENDERS FOR URETHANE ELASTOMERS

Gayle Dameron Edwards, Nederland, and Philip Hotchkiss Moss, Austin, Tex., assignors to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Original application May 26, 1969, Ser. No. 827,989, now Patent No. 3,681,456. Divided and this application Aug. 2, 1971, Ser. No. 168,840

Int. Cl. C08g 22/16

U.S. Cl. 260—77.5 AQ 2 Claims

New compounds having the formula

$$[HO—\text{alkylene}—(O—\text{alkylene})_xNH]_2C=S$$

are chain extenders for polyurethanes.

3,736,297

ACYLATION OF PYRAZOLE CONTAINING POLYMERS

William J. I. Bracke, Brussels, Belgium, assignor to Labofina S.A., Brussels, Belgium

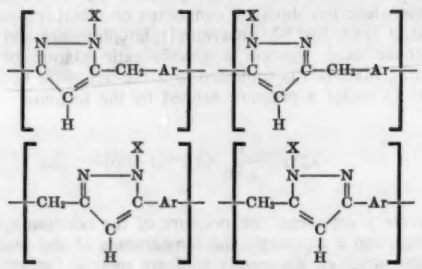
Filed Jan. 5, 1972, Ser. No. 215,686

Claims priority, application Belgium, Apr. 21, 1971, 766,039

Int. Cl. C08g 22/02

U.S. Cl. 260—77.5 C 12 Claims

Polymer compositions having a molecular weight above 1000 and containing the repeating units, distributed at random:



wherein Ar is a divalent radical selected from the group consisting of aliphatic radicals, alicyclic radicals, aliphatic-alicyclic radicals, carbocyclic and heterocyclic aryl radicals and X is the radical of an acid selected from the group consisting of organic and inorganic acids and substituted such acids.

3,736,298

POLYISOCYANURATE PREPARATION USING DOUBLE ALKOXIDE CATALYSTS

Paul F. Schmit, Stillwater, and George M. Rambosek, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,410

Int. Cl. C08g 22/40, 22/46

U.S. Cl. 260—77.5 NC 7 Claims

Isocyanates are polymerized, or reacted with polyols, in the presence of double alkoxide catalysts to produce polyisocyanurates or poly(urethane-isocyanurate) polymers.

This invention relates to a process for trimerizing polyisocyanates to produce polyisocyanurates. In another aspect, it relates to a process for reacting polyisocyanates with polyols to produce cross-linked poly(urethane-isocyanurate) polymers.

3,736,299

THERMALLY STABLE POLYMERS HAVING CONTIGUOUS PYRAZINE, IMIDAZOLE AND Δ^3-PYRROLINE RINGS

Carl S. Marvel, Tucson, Ariz., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 30, 1971, Ser. No. 158,521

Int. Cl. C08g 33/02

U.S. Cl. 260—78 R 11 Claims

The polymerization of 2,3-diamino-5,6-dicyanopyrazine or its hydrolysis and alcoholysis products with a catalyst such as polyphosphoric acid gives polymers having recurring fused pyrazine, imidazole and Δ^3-pyrroline rings. The polymers have high thermal stability and are useful for the preparation of molded objects, especially by high pressure techniques.

3,736,300

PERFLUOROALKYLSULFONAMIDO-ALKYL ESTERS OF FUMARIC ACID AND OTHER ETHYLENICALLY UNSATURATED POLYBASIC ACIDS AND POLYMERS THEREOF

Eduard K. Kleiner, New York, N.Y., assignor to Ciba-Geigy Corporation

No Drawing. Original application Apr. 1, 1969, Ser. No. 812,439, now Patent No. 3,636,085. Divided and this application May 5, 1971, Ser. No. 140,616

Int. Cl. C08f 3/62, 3/70, 3/92

U.S. Cl. 260—78.4 E 10 Claims

Monomeric perfluoroalkylsulfonamido-alkyl esters of fumaric, maleic, citraconic, mesaconic, itaconic, aconitic, and methylene malonic acid form homopolymers and form copolymers with other ethylenically unsaturated comonomers. The polymers obtained have valuable soil repellent properties and are therefore especially useful in textile finishes. A preferred compound exemplified is bis[2-(N-ethyl - n - perfluorooctanesulfonamido)ethyl] itaconate.

3,736,301

CURABLE POLYSULFIDE POLYMERS

Morris Benjamin Berenbaum, 132 Chaumont Drive, Williamsville, N.Y. 14221; and John Michael Pachuta, 9 Alton Road 08619; and Earl Harry Sorg, 108 Greenland Ave. 08638, both of Trenton, N.J.

No Drawing. Filed Aug. 20, 1971, Ser. No. 173,694

Int. Cl. C08g 23/00

U.S. Cl. 260—79 5 Claims

A one-package sealant composition consisting essentially of liquid mercaptan-terminated polysulfide polymer having polysulfide groups interconnected by divalent aliphatic hydrocarbon groups wherein the carbon atoms may be interrupted with oxygen atoms, a dual purpose curing agent and adhesion improver which is a mixture of a polyol diacrylate and a polyol triacrylate, said polyols having 2 to 8 carbon atoms, the amount of said acrylate mixture being at least the stoichiometric amount needed to react with the mercaptan groups of said polymer, and a curing catalyst which is an amine-impregnated molecular sieve. The compositions disclosed herein cure rapidly and are especially useful and show good adhesion to vinyl base plastic substrates, acrylonitrilebutadiene-systems (ABS), or polyvinyl chloride or polyvinylidene chloride substrates.

3,736,302

PROCESS FOR POLYMERIZING VINYL COMPOUNDS USING PREMIXED REDOX CATALYST OR NITROUS COMPOUNDS/SULFOXY COMPOUNDS

Yasushi Joh and Teruhiko Sugimori, Otake, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

No Drawing. Filed July 23, 1971, Ser. No. 165,716

Claims priority, application Japan, July 30, 1970, 45/66,769

Int. Cl. C08f 3/76, 7/04, 15/02

U.S. Cl. 260—79.3 MU 5 Claims

In an improved process for polymerizing or copolymerizing a vinyl compound, particularly acrylonitrile, in the presence of a redox catalyst combination of either nitrous acid or its salt and a reducing sulfoxy compound, a main feature of which is such that both the catalyst components are previously reacted with each other under a batch system while the pH of the reaction system is maintained within the range of 7.0 to 4.0 or 3.0 to 1.0, or

first 7.0 to 4.0 and successively 3.0 to 1.0, and thereafter, the resultant catalyst solution is fed into a polymerization vessel.

Polymers, thus obtained, have advantageous properties suitable for most textile applications.

3,736,303

VINYLIDENE CHLORIDE COPOLYMER

David R. Smith and Howard Peterson, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation of abandoned application Ser. No. 819,957, Apr. 28, 1969. This application June 24, 1971, Ser. No. 156,479

Int. Cl. C08f *15/40, 37/00*

U.S. Cl. 260—79.3 M 3 Claims

A stable polyvinylidene chloride latex composition suitable for coating substrates, particularly unprimed polyethylene and polypropylene, comprising a copolymer of (A) 70 to 95% by weight vinylidene chloride, (B) 0.1 to 3% by weight ethylenically unsaturated sulfur acid having sulfur in valence state 6, (C) 0 to 5% by weight ethylenically unsaturated carboxylic acid and (D) 2 to 29.9% by weight ethylenically unsaturated monomer other than (A), (B) or (C).

3,736,304

PRODUCTION OF POLYMERS COMPRISING ACRYLONITRILE AND A TERTIARY AMINO ALKYL ESTER OF AN UNSATURATED ACID

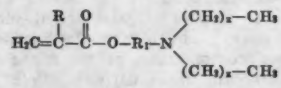
James C. Masson, Chapel Hill, and Lester A. Self, Roxboro, N.C., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,712

Int. Cl. C08f *15/22*

U.S. Cl. 260—85.5 R 8 Claims

By using a varied monomer feed rate to a polymerization reactor and acidifying the reaction mass with a monobasic acid a markedly improved process for obtaining excellent conversion and high yields of polymers is achieved, the polymers comprising acrylonitrile and a tertiary amino alkyl ester having the general formula:



wherein R is hydrogen or methyl, R_1, is an alkylene of two to four carbon atoms, $—CH_2—CH(OH)—CH_2—$, or $—CH_2—CH_2—O—CH_2—CH_2—$, and x is an integer zero to three, inclusive.

3,736,305

PRODUCTION OF COPOLYMERS OF ETHYLENE

Klaus Kinkel, Rodenkirchen, Helmut Pfannmueller, Limburgerhof, Georg Schmidt-Thomee, Heidelberg, and Franz Georg Mietzner and Volker Gierth, Ludwigshafen, Germany, assignors to Badische Aniline- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 19, 1968, Ser. No. 785,355

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 2 Claims

Production of copolymers of ethylene which contain polymerized units of (1) major amounts of ethylene; (2) minor amounts of C_3 to C_{12} alkenecarboxylic acids; (3) minor amounts of C_3 to C_8 alkenes; and, if desired, (4^1) minor amounts of esters of C_3 to C_{12} alkene carboxylic acids with C_3 to C_8 secondary or C_4 to C_8 tertiary alkanols and/or (4^2) minor amounts of conventional other monomers which are copolymerizable with ethylene.

3,736,306

POLYMERIZATION OF VINYL CHLORIDE WITH BLENDS OF PEROXIDE INITIATORS

Rupert E. Light, Jr., Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,148

Int. Cl. C08f *1/60*

U.S. Cl. 260—87.1 18 Claims

Process for the polymerization of vinyl chloride or the copolymerization of vinyl chloride and vinyl acetate at temperatures of less than about 70° C., in the presence of a polymerization initiator which is a blend of an acetyl alkylsulfonyl peroxide with (A) a peroxydicarbonate, (B) a diacyl peroxide and a tertiary-alkyl neoacid peroxyester or (C) a diacyl peroxide and a peroxydicarbonate.

3,736,307

ETHYLENE-PROPYLENE COPOLYMER PRODUCTION WITH TRIPHENYLPHOSPHITE AS CATALYST ADJUVANT

Robert J. Perry, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 26, 1970, Ser. No. 84,146

Int. Cl. C08f *15/04*

U.S. Cl. 260—88.2 R 5 Claims

Ethylene-propylene copolymer is produced in a catalyst system comprising diethylaluminum chloride and titanium trichloride and as an adjuvant, triphenylphosphite. At a level of about 4–10 mol percent triphenylphosphite based on the mols of titanium trichloride, polymer is produced which is more easily handled in conventional finishing equipment and which can be fabricated into film which is virtually free of fish eyes and other imperfections.

3,736,308

METHOD FOR THE PREPARATION OF POLYEPOXIDES BY POLYMERIZING 1,2-EPOXIDES BY THE USE OF A NOVEL CATALYST

Koji Hashimoto, Yokohama-shi, Noboru Mogi, Kawasaki-shi, and Makoto Shindo, Urawa-shi, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Feb. 14, 1966, Ser. No. 527,083

Claims priority, application Japan, Feb. 20, 1965, 40/9,358; Sept. 24, 1965, 40/58,079

Int. Cl. C08f *7/12;* C08d *3/04*

U.S. Cl. 260—88.3 A 12 Claims

A process of preparing polyepoxides comprising polymerizing or copolymerizing 1,2-epoxides, using as the novel catalyst a composition composed of the following two components:

(a) A specific metal salt of a carboxylic acid;

(b) A specific organoaluminum compound to obtain a polymer having high crystallinity;

or three components consisting of (a) and (b) above and (c), a specific ether when it is desirable to obtain low crystallinity.

3,736,309

PRODUCTION OF DIHYDROPYRIDACENE POLYMERS WHICH ARE FREE OF INTER-MOLECULAR CROSS-LINKING

Klaus Hannes Gump, Gillette, and Dagobert Engelbert Stuetz, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,487

Int. Cl. C08f *3/76, 15/22, 27/00*

U.S. Cl. 260—88.7 R 22 Claims

A process is provided for the conversion of an acrylic polymer to a form exhibiting increased thermal stability

wherein pendant nitrile groups are catalyticaliy cyclized to form a product which is free of inter-molecular cross-linking. The cyclization reaction is conducted at an elevated temperature in an oxygen-free zone in the homogeneous phase and is catalyzed by an organic cyclization promoting agent selected from the group consisting of a carboxylic acid, a sulfonic acid, and a phenol, or alternatively by the use of a Lewis acid cyclization promoting agent in combination with the organic cyclization promoting agent.

The resulting polymeric product may be utilized as an adhesive, a coating polymer, a matrix polymer, or formed into shaped articles, such as fibers or films when of sufficient molecular weight.

In a preferred embodiment of the process an acrylonitrile homopolymer is fully cyclized to form polydihydropyridacene homopolymer which is free of inter-molecular cross-linking.

3,736,310

PROCESS FOR PRODUCING DIHYDROPYRIDACENE POLYMERS WHICH ARE FREE OF INTER-MOLECULAR CROSS-LINKING

Klaus Hannes Gump, Gillette, and Dagobert Engelbert Stuetz, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Nov. 10, 1970, Ser. No. 88,489

Int. Cl. C08f *3/76, 15/22, 27/00*

U.S. Cl. 260—88.7 R **12 Claims**

An improved process is provided for the conversion of an acrylic polymer to a form exhibiting increased thermal stability wherein pendant nitrile groups are catalytically cyclized to form a product which is free of inter-molecular cross-linking. The cyclization reaction is conducted at an elevated temperature in an oxygen-free zone in the presence of 2-pyrrolidinone which has been found capable of catalytizing the reaction. The cyclization reaction may be conducted (1) in the homogeneous phase with the acrylic polymer being initially dissolved in 2-pyrrolidinone, or (2) by way of a slurry transformation technique.

The resulting polymeric product may be utilized as an adhesive, a coating polymer, a matrix polymer, or formed into shaped articles, such as fibers or films.

In a preferred embodiment of the process an acrylonitrile homopolymer is fully cyclized to form dihydropyridacene homopolymer which is free of inter-molecular cross-linking.

3,736,311

PROCESS FOR IMPROVING THE THERMAL STABILITY OF POLYVINYL ALCOHOL WITH A POLYMERIC POLYCARBOXYLIC ACID

Pallatheri M. Subramanian, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Mar. 2, 1972, Ser. No. 231,363

Int. Cl. C08f *27/16*

U.S. Cl. 260—91.3 PV **6 Claims**

The thermal stability of polyvinyl alcohol is improved by mixing a sufficient amount of a polymeric polycarboxylic acid such as polyacrylic acid; polymethacrylic acid; copolymers of acrylic acid, methacrylic acid or maleic acid containing more than 10 percent acidic monomer, provided that such copolymers or their salts are water soluble at the specified pH levels; and vinyl methyl ether/maleic anhydride copolymer, with polyvinyl alcohol to convert the alkali metal acetate contained with the polyvinyl alcohol to acetic acid and an alkali metal salt of the polymeric carboxylic acid, such that when the composition is made up as a 10 percent solution in water, the solution has a pH of from about 4.0 to about 4.5.

3,736,312

PROCESS FOR POLYMERIZING CONJUGATED DIENE MONOMERS

Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

No Drawing. Continuation-in-part of applications Ser. No. 854,273, Aug. 29, 1969, and Ser. No. 143,169, May 13, 1971, which is a continuation of application Ser. No. 854,286, Aug. 29, 1969, all now abandoned. This application June 7, 1971, Ser. No. 150,716

Int. Cl. C08d *3/04, 3/06, 3/08*

U.S. Cl. 260—94.2 T **22 Claims**

Conjugated dienes are polymerized by a new catalyst system which permits control of the molecular weight and gives a more easily processed product. This catalyst system comprises (1) a lithium allyl compound having 3–10 carbon atoms, and (2) a sodium oxyhydrocarbon compound of 1–10 carbon atoms in which the hydrocarbon portion can be a tertiary alkyl radical, but is preferably a secondary alkyl radical, or a potassium tertiary alkoxide of 4–10 carbon atoms. The diene polymers produced by this process have controllable molecular weights in the range of 5,000 to 1,000,000, preferably 100,000 to 500,000, broad molecular weight distribution, high glass transition temperatures, high degree of branching and are more easily processed in the production of rubber and other compositions for commercial use.

3,736,313

ERYTHROMYCIN DERIVATIVES

Peter Hadley Jones, Lake Forest, and Thomas John Perun, Libertyville, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation of abandoned application Ser. No. 821,016, May 1, 1969. This application Feb. 26, 1971, Ser. No. 119,418

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 E **7 Claims**

The 2',4''-di-O-alkanoyl and the 2',4'',11-tri-O-alkanoyl derivatives of erythromycin are prepared by esterification of erythromycin with an appropriate acid anhydride. These resulting ester derivatives are initially de-esterified in the 2'-position to prepare the 4''-O-alkanoyl or the 4'',11-di-O-alkanoyl erythromycin, and then, if desired, these de-esterification products are reacted with another acid anhydride to prepare a dissimilarly di-substituted or tri-substituted ester. Through repetitive esterification and de-esterification, combinations of the mono substituted and the similarly or dissimilarly multiple substituted erythromycin esters are prepared. These compounds have antibiotic activity.

3,736,314

UNSATURATED NUCLEOSIDE PHOSPHONATES, PHOSPHONIC ACIDS AND PHOSPHONIC ACID SALTS

Gordon H. Jones, Palo Alto, and John G. Moffatt, Los Altos, Calif., assignors to Syntex Corporation, Panama, Republic of Panama

No Drawing. Continuation-in-part of application Ser. No. 709,234, Feb. 29, 1968, which is a continuation-in-part of applications Ser. No. 654,056, July 18, 1967, now abandoned, and Ser. No. 805,792, Mar. 10, 1969, which is a continuation-in-part of application Ser. No. 643,078, June 2, 1967, now Patent No. 3,524,846, which in turn is a continuation-in-part of application Ser. No. 679,218, Oct. 30, 1967, now Patent No. 3,446,793. This application Oct. 20, 1970, Ser. No. 82,555

Int. Cl. C07d *51/52, 51/54*

U.S. Cl. 260—211.5 R **12 Claims**

The 5',6'-dideoxy-ribo-hex-5'-enofuranosyl nucleoside 6' - phosphonates, 5',6' - dideoxy-arabino-hex-5'-enofuranosyl nucleoside 6'-phosphonates, and 5',6'-dideoxyxylo-hex-5'-enofuranosyl nucleoside 6'-phosphonates; and the

2'-deoxy, 3'-deoxy and 2',3'-dideoxy counterparts thereof and the corresponding 6'-phosphonic acids, and their pharmaceutically acceptable salts are valuable pharmacological agents and are useful as intermediates for the corresponding saturated nucleoside 6'-phosphonates. For example, they are useful in regulating and controlling metabolism and for producing metabolic deficiencies in biological systems.

3,736,315

1-(3,4-DIMETHOXY-PHENYL) - 4 - METHYL-5-ETHYL-7,8-DIMETHOXY - 5H-2,3-BENZODIAZEPINE

Jeno Korosi, Tibor Lang, Endre Komlos, and Lujza Erdelyi, Budapest, Hungary, assignors to Egyesult Gyogyszer-es Tapszergyar, Budapest, Hungary

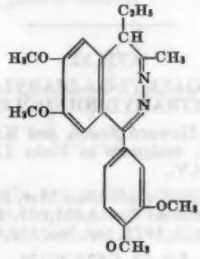
No Drawing. Continuation-in-part of abandoned application Ser. No. 688,674, Dec. 7, 1967. This application Mar. 4, 1971, Ser. No. 121,203

Claims priority, application Hungary, Dec. 9, 1966, GO-1,000

Int. Cl. C07d *53/04*

U.S. Cl. 260—239 BD **1 Claim**

1-(3,4 - dimethoxy - phenyl) - 4 - methyl - 5 - ethyl-7,8-dimethoxy-5H - 2,3 - diazepine having the following formula



This new compound is non-toxic and pharmacologically active. Its acid addition salts also have useful pharmacological activities.

3,736,316

1,2,5-BENZOTRIAZEPIN-4-ONES AND THEIR PREPARATION

Silvano Rossi, Milan, Italy, assignor to Roussel-UCLAF, Paris, France

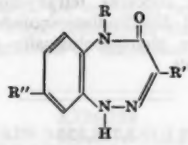
No Drawing. Continuation of application Ser. No. 709,824, Mar. 1, 1968. This application July 28, 1970, Ser. No. 59,025

Claims priority, application Italy, Mar. 7, 1967, 13,439/67

Int. Cl. C07d *33/54*

U.S. Cl. 260—239.3 B **17 Claims**

This invention relates to new heterocyclic compounds with polynitrogenic structure having the formula



wherein R is hydrogen, an alkyl radical having from 1 to 6 carbon atoms, an aryl radical or an aralkyl radical having at most eight carbon atoms, a cycloalkyl radical having at most seven carbon atoms.

R' is hydrogen, a carboxy group free or esterified with an alkanol having from 1 to 4 carbon atoms, a cyano group, a mercapto group having the general formula S—X (in which X represents an alkyl, aryl, aralkyl, carbalkoxy alkyl, carboxyalkyl, dialkylaminoalkyl, or an alkyleneaminoalkyl), an amino group having the formula

(in which Z_1 represents a hydrogen, an alkyl radical, a carbalkoxy group or an acyl group and Z_2 is hydrogen, or an alkyl radical) the radical

(Y is selected from the group consisting of amino, hydrazino, substituted hydrazino and guanidino or a halogen atom) and R'' is hydrogen, hydroxy, methoxy, a nitro group, a carbalkoxy group in which the alkyl radical has from 1 to 3 carbon atoms, a halogen or the trifluoromethyl group and their acid addition salts with a therapeutically compatible inorganic or organic acid. These compounds possess interesting tranquilizing properties and can be used in human or veterinary therapy for the treatment of mental illness or behaviour disorders.

3,736,317

2,2 - DIMETHYL-6,7α-DIFLUOROMETHYLENE-20-SPIROX-4-ENE-3-ONES OR 3-OLS AND ACYL ESTERS THEREOF

Glen E. Arth, Cranford, and Gary H. Rasmusson, Watchung, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed July 28, 1971, Ser. No. 167,017

Int. Cl. C07c *173/06*

U.S. Cl. 260—239.55 R **2 Claims**

2,2 - dimethyl-6,7α-difluoromethylene-20-spirox-4-ene-3-ones and the corresponding 3-ols and their acyl ester derivatives are provided which have antiandrogenic activity.

3,736,318

6-(2-SUBSTITUTED-3-PHENYL-2H-ISOINDOLE-1-CARBOXAMIDO)PENICILLANIC ACIDS

Ronald J. McCaully, Malvern, and Stanley C. Bell, Penn Valley, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Sept. 9, 1971, Ser. No. 179,174

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **2 Claims**

Novel 6-(2-substituted-3-phenyl-2H-isoindole-1-carboxamido)penicillanic acids are described which are useful as antibacterial agents.

3,736,319

NOVEL CYCLOPENTANONE-2-CARBOXYLATES

Jacques Martel, Bondy, and Edmond Toromanoff, Paris, France, assignors to Roussel-UCLAF, Paris, France

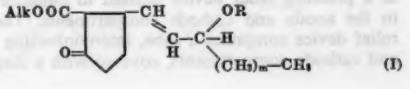
No Drawing. Filed Apr. 28, 1971, Ser. No. 138,274

Claims priority, application France, Apr. 30, 1970, 15,908

Int. Cl. C07d *7/04*

U.S. Cl. 260—240 R **7 Claims**

Novel alkyl 3-(3' - OR - trans 1'-alkenyl)-cyclopentanone-2-carboxylates of the formula



(I)

wherein Alk is alkyl of 1 to 7 carbon atoms, R is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of 1 to 18 carbon atoms and α-tetrahydropyranyl and *m* is 3, 4 or 5 which are intermediates for prostaglandins and their preparation and novel intermediates.

3,736,320

METHOD OF PREPARING HEXAHYDRO-1,3,5-TRIACYL-s-TRIAZINES

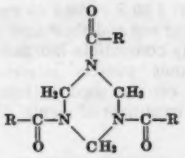
George A. Karustis, Jr., Westfield, N.J., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Aug. 17, 1970, Ser. No. 64,573

Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS 13 Claims

A process is provided for the preparation of hexahydro-1,3,5-triacyl-s-triazines having the structural formula:



wherein R is a lower aliphatic hydrocarbon radical or a halogenated lower aliphatic hydrocarbon radical comprising reacting a polymeric formaldehyde, a lower aliphatic anhydride and a lower aliphatic or halogenated lower aliphatic nitrile in the presence of a catalytically effective amount of an aryl sulfonic acid containing from about 0.5 to about 7.0% sulfuric acid and from 0 to about 10% water, and thereafter recovering the resulting product.

3,736,321

NOVEL CYANINE DYES WITH PYRROLOQUINOXALINE OR PYRROLOPYRAZINE NUCLEI

John D. Mee, Donald W. Heseltine, and Wilbur S. Gaugh, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application Feb. 15, 1968, Ser. No. 705,595, now Patent No. 3,598,595. Divided and this application June 22, 1970, Ser. No. 59,815

Int. Cl. C09b *23/06, 23/10*

U.S. Cl. 260—240.6 6 Claims

Cyanine dyes which feature a pyrrolo[2,3-b]quinoxaline nucleus or a pyrrolo[2,3-b]pyrazine nucleus, joined at the 3-carbon atom thereof to the methine linkage of the cyanine dye, sensitize photographic silver halide emulsions.

3,736,322

CHLORINATOR CELL WITH INTERNAL PRESSURE REGULATION

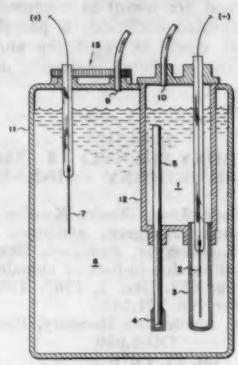
Herman Helber, Azusa, and Ernest L. Littauer, Hollywood, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed July 19, 1971, Ser. No. 163,732

Int. Cl. B01k *3/10*

U.S. Cl. 204—266 4 Claims

An electrolytic cell for the generation of chlorine wherein a pressure relief device is used to equalize pressures in the anode and cathode compartments. The pressure relief device comprises a tube, interconnecting the anode and cathode compartments, covered with a diaphragm of a greater porosity than the diaphragm separating the anode from the cathode compartment. The unequal pressures are caused by an initial absorption of chlorine when the cell is started.



3,736,323

1-AMINOALKYL-2,6-DIARYL-4,5,6,7-TETRAHYDROINDOLES

Michael Finizio, Howard Beach, and Karl Schoen, Kew Gardens, N.Y., assignors to Endo Laboratories Inc., Garden City, N.Y.

No Drawing. Original application Mar. 18, 1968, Ser. No. 714,067, now Patent No. 3,621,027. Divided and this application Feb. 3, 1971, Ser. No. 112,419

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.61 4 Claims

1 - aminoalkyl - 2,6 - diaryl - 4,5,6,7-tetrahydroindoles are useful as analgetics and anti-tussives.

3,736,324

4,5-DIHYDRO-1H[1,4]DIAZEPINO[1,2-a]INDOLE 2(3H)-CARBOXAMIDES

Meier E. Freed and Elisabeth Hertz Freed, Paoli, Italy, assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 769,388, Oct. 21, 1968, now Patent No. 3,641,030. This application Apr. 1, 1971, Ser. No. 130,523

Int. Cl. C07d *53/02*

U.S. Cl. 260—293.59 2 Claims

This invention concerns tetrahydropyrazinoindole-2-carboxamides and dihydrodiazepinoindole - 2 - carboxamides which are pharmacologically active as central nervous depressants.

3,736,325

HYDRAZINES OF ISOXAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Theodor Denzel, Nuremberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

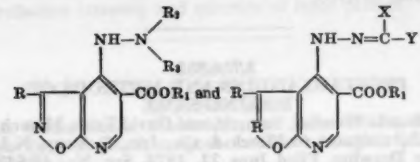
No Drawing. Filed Mar. 29, 1971, Ser. No. 129,200

Int. Cl. C07d *39/00*

U.S. Cl. 260—295.5 B 5 Claims

New hydrazines, hydrazides and hydrazones of isox-

azolopyridine carboxylic acids and esters having the general formula



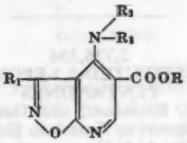
and salts thereof, are useful as central nervous system depressants and also increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,736,326
ISOXAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Theodor Denzel, Nuremberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,199
Int. Cl. C07d *39/00*
U.S. Cl. 260—295.5 B **11 Claims**

New isoxazolo[5,4-b]pyridine-5-carboxylic acids and esters having the general formula



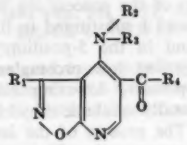
as well as their salts, are useful as central nervous system depressants. These compounds also increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,736,327
ISOXAZOLOPYRIDINE KETONE DERIVATIVES

Theodor Denzel, Nuremberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,198
Int. Cl. C07d *39/00*
U.S. Cl. 260—296 H **7 Claims**

New isoxazolo[5,4-b]pyridine-5-ketones having the general formula



as well as their salts, are useful as central nervous system depressants. These compounds also increase the intracellular concentration of adenosine-3',5'-cyclic monophosphate.

3,736,328
CERTAIN 3-HALO-5-SULFINYL-1,2,4-THIADIAZOLES

Lawrence S. Wittenbrook, 720 W. 5th St., and Richard J. Timmons, 222 Grand Ave., both of Marysville, Ohio 43040

No Drawing. Continuation-in-part of application Ser. No. 578,991, Sept. 13, 1966. This application Feb. 28, 1969, Ser. No. 803,411
Int. Cl. C07d *91/60*
U.S. Cl. 260—302 SD **4 Claims**

Novel 3 - (halogen) - 5-(organothio)-, (sulfinyl)-, and (sulfonyl)-1,2,4-thiadiazoles and their production and use.

3,736,329
5-NITRO-2-THIOCARBAMYL THIAZOLE

John Pomfret Verge, Henley-on-Thames, and Peter Graham Hughes, Sunningdale, England, assignors to Lilly Industries Limited, London, England

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,238
Claims priority, application Great Britain, Apr. 15, 1970, 18,068/70
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 R **1 Claim**

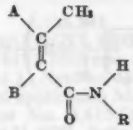
5 - nitro - 2 - thiocarbamyl thiazole prepared by reaction of 5-nitro-2-cyanothiazole and thioacetamide is useful as a plant fungicide.

3,736,330
BIOCIDALLY ACTIVE CARBOXAMIDE DERIVATIVES

Pieter Ten Haken, Herne Bay, Kent, England, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,389
Claims priority, application Great Britain, Apr. 15, 1970, 17,956/70
Int. Cl. C07d *91/34*
U.S. Cl. 260—306.8 R **2 Claims**

Certain novel fungicidal carboxamide derivatives having the formula



wherein R represents one of certain heterocyclic moieties containing at least one nitrogen atom, A represents alkyl and B represents hydrogen or A and B together with the indicated carbon atoms forms a benzene ring or a hetero ring containing oxygen.

3,736,331
ISOTHIOUREAS

James Whyte Black, Hempstead, Graham John Durant, Welwyn Garden City, John Colin Emmett, Kimpton, and Charon Robin Ganellin, Welwyn Garden City, England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

No Drawing. Filed Oct. 14, 1970, Ser. No. 80,819
Int. Cl. C07d *49/36, 31/40, 91/42*
U.S. Cl. 260—309 **14 Claims**

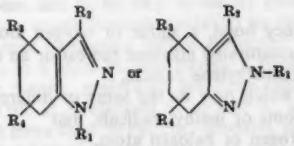
N-(heterocyclic-alkyl)isothioureas. These compounds inhibit histamine activity.

3,736,332
METHOD FOR THE PREPARATION OF 4,5,6,7-TETRAHYDROINDAZOLES

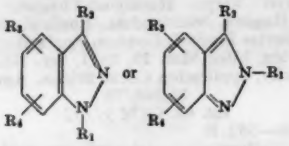
Ivan Butula, Zagreb, Yugoslavia, assignor to PLIVA, Pharmaceutical and Chemical Works, Zagreb, Yugoslavia

No Drawing. Filed Sept. 18, 1970, Ser. No. 73,643
Claims priority, application Germany, Sept. 26, 1969, P 19 48 793.5
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 R **11 Claims**

A method for the preparation of 4,5,6,7,-tetrahydroindazoles of the formula:



in which an indazole of the general formula:



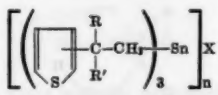
is hydrogenated in the presence of palladium, rhodium or platinum or catalysts containing mixtures of them and in the presence of a strong acid in a molar equivalent at least equal to that of the basic groups.

3,736,333
THIENYL ALKYL TIN COMPOUNDS

James P. Foster and Samuel B. Soloway, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed July 12, 1971, Ser. No. 161,965
Int. Cl. C07d *63/12*
U.S. Cl. 260—329 ME **5 Claims**

Organo-tin compounds of the formula



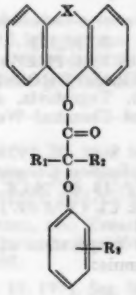
wherein R is a lower alkyl, R′ is H or R, *n* is 1 or 2 and X is a Cl or OH when *n* is 1 and —O— when *n* is 2 are useful in controlling mites.

3,736,334
ANTI-CHOLESTEROL PHENOXYACETIC ACID ESTERS

Werner Winter, Viernheim, Hesse, Max Thiel, Mannheim, Kurt Stach, Mannheim-Waldhof, Felix Helmut Schmidt, Mannheim-Seckenheim, and Harald Stork, Lampertheim, Hesse, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

No Drawing. Filed Jan. 19, 1971, Ser. No. 107,822
Claims priority, application Germany, Jan. 23, 1970, P 20 02 941.8
Int. Cl. C07d *7/42*
U.S. Cl. 260—335 **2 Claims**

Phenoxyacetic acid esters of the formula



(I)

wherein

X is a valency bond, a sulfur or oxygen atom, a saturated or unsaturated alkylene radical or an oxamethylene or thiamethylene radical,

R_1 and R_2, which may be the same or different, are hydrogen atoms or methyl radicals, and

R_3 is a hydrogen or halogen atom,

which compounds serve to reduce the cholesterol level in blood. The process of making and using the compounds are also covered.

3,736,335
PROSTAGLANDINS AND METHODS OF MAKING SAME

Norman L. Wendler, Summit, and David Taub, Metuchen, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 22, 1970, Ser. No. 48,548
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **3 Claims**

(±)-prostaglandin E_1 is totally synthesized with a high degree of stereoselectivity and in good yield at the various steps from 6-methxy-3-indanol by a sequence of reactions proceeding through 6-methoxy-3-indeneheptanoic acid ester, 2,6-dioxo-4,5,6,7-tetrahydro-7-methyl-3-indanheptanoic acid ester 2-cyclic ethylene acetal, cis-3,4,5,7a-tetrahydro-7-methyl - 2 - oxoindanheptanoic acid esters, trans-trans 3 - acetyl-2-(2-carboxy-ethyl)-5-oxocyclopentane heptanoic acid ester 5-cyclic-ethylene acetal, 3-acetoxy - 2 - formyl-5-oxocyclopentaneheptanoic acid ester 5-cyclic ethylene acetal, and 15-dehydro (±)-prostaglandin E_1. The end compound has the biological activity of naturally occurring prostaglandin E_1.

3,736,336
4,5-DISUBSTITUTED-2,3-EPOXYCYCLOPENTANONES

Donald P. Strike, Rosemont, and Herchel Smith, Bryn Mawr, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Application Nov. 12, 1969, Ser. No. 876,116, which is a continuation-in-part of application Ser. No. 765,020, Oct. 4, 1968, which in turn is a continuation-in-part of application Ser. No. 702,185, Feb. 1, 1968, all now abandoned. Divided and this application Apr. 15, 1971, Ser. No. 134,465
Int. Cl. C07d *1/20, 1/22*
U.S. Cl. 260—345.7 **5 Claims**

4,5-disubstituted-3-hydroxycyclopentanones (I) are prepared by hydrogenolyzing the corresponding 4,5-disubstituted-2,3-epoxycyclopentanone (IV) which in turn is provided by reacting the corresponding 4,5-disubstituted-2-cyclopenten-1-one (III) with alkaline hydrogen peroxide. Compounds III are prepared by cyclizing the corresponding 2,3-disubstituted levulinaldehyde (II) with a base. The products of the process are biologically active, especially Compound I substituted in the 4-position with 3′-hydroxyoctyl and in the 5-position with 6′-carboxyhexyl. This compound has prostaglandin-like activity, especially blood pressure lowering and bronchodilator activity, and is a totally-synthetic dihydroprostaglandin E_1 (dihydro PGE_1). The process of the invention may also be used to obtain compounds with prostaglandin-like activity from appropriately substituted naturally occurring cyclopentanones, e.g. those isolated from the Caribbean gorgonian, *Plexaura homomalla.*

3,736,337
TETRAHALOGENATED CHROMOGENIC COMPOUNDS AND THEIR USE

Sheldon Farber, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

No Drawing. Filed Apr. 27, 1971, Ser. No. 137,952
Int. Cl. C07d *5/32, 27/22, 27/56*
U.S. Cl. 260—343.3 **18 Claims**

Tetrahalogenated chromogenic compounds are disclosed. One such compound is 3-(p-diethylaminophenyl)-3-(1,2-dimethylindol - 3 - yl)-4,5,6,7-tetrachlorophthalide. These colorless, but colorable dyes are employed in pressure-sensitive record material and mark-forming manifold

systems. The tetrahalogenated compounds of this invention demonstrate good fade resistance both in respect to reflective intensity and quantity of color present.

3,736,338
BENZODIOXOLE DERIVATIVES USEFUL AS PESTICIDES

Peter Stuart Gates, Cambridge, and John Gillon, Great Shelford, England, assignors to Fisons Limited, Suffolk, England

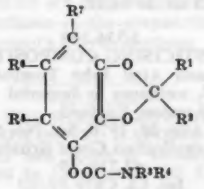
No Drawing. Continuation-in-part of application Ser. No. 706,628, Feb. 19, 1968. This application Apr. 1, 1971, Ser. No. 130,487

Claims priority, application Great Britain, Feb. 21, 1967, 8,174/67; Japan, Aug. 12, 1970, 45/70,147

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 **7 Claims**

Substituted benzodioxoles of the formula:



wherein R^1 and R^2 are hydorgen or alkyl of 1 to 6 carbon atoms or together with the linking carbon atom form a cycloalkane ring of 5 to 7 carbon atoms;

R^3 is hydrogen, alkyl of 1 to 4 carbon atoms or acetyl;

R^4 is alkyl of up to 4 carbon atoms, alkenyl of up to 4 carbon atoms, or alkynyl of up to 4 carbon atoms; and

one of R^5, R^6 and R^7 is hydrogen, halogen or alkyl of 1 to 4 carbon atoms; and

the others of R^5, R^6 and R^7 each represents a hydrogen atom are valuable pesticides, particularly insecticides.

3,736,339
SODIUM EXO-CIS - 1,4-ENDOXO-1-SUBSTITUTED CYCLOHEX - 5-ENE-2,3-DICARBOXYLATE COMPOUNDS

Vincent Lamberti, Upper Saddle River, and Robert Reardon, Tenafly, N.J., assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Feb. 25, 1971, Ser. No. 118,972

Int. Cl. C07d *5/32*

U.S. Cl. 260—347.3 **2 Claims**

The use of exo-cis-1,4-endoxo-alicyclic-2,3-dicarboxylates such as sodium exo-cis-1,4-endoxocyclohexene-2,3-dicarboxylate and derivatives thereof as builders in detergent compositions.

3,736,340
METHOD FOR THE QUANTITATIVE DETERMINATION OF CHOLESTEROL

Amritlal C. Parekh and David H. Jung, Indianapolis, Ind., assignors to Research Corporation, New York, N.Y.

Original application Feb. 5, 1970, Ser. No. 8,954. Divided and this application May 13, 1971, Ser. No. 143,189

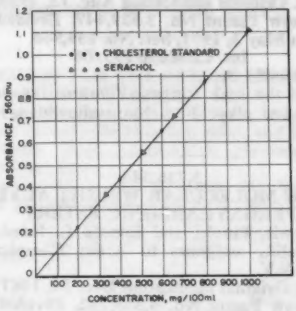
Int. Cl. C07c *167/42*

U.S. Cl. 260—397.25 **7 Claims**

In a method for the determination of total cholesterol in blood serum, plasma or other cell free body fluid the steps of adding a reagent comprising a mixture of ferric acetate $[Fe(C_2H_3O_2)_3]$ and uranium acetate

$$[UO_2(C_2H_3O_2)_2]$$

to the fluid whereby the total cholesterol content thereof is solubilized and those chromogens which interfere with the determination are precipitated and separating the liquid phase containing solubilized cholesterol from the



precipitate. The cholesterol content is then determined quantitatively.

3,736,341
ACRYLOXYACYL CHLORIDES

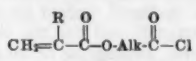
Martin J. Diamond, 6131 Hillegass Ave., Oakland, Calif. 94618, and Howard L. Needles, Davis, Calif. 95618

No Drawing. Original application Mar. 20, 1970, Ser. No. 21,499, now Patent No. 3,615,554. Divided and this application Nov. 12, 1971, Ser. No. 198,471

Int. Cl. C07c *69/54*

U.S. Cl. 260—405 **4 Claims**

Acryloxyacyl chlorides of the structure—



wherein R is H or CH_3 and Alk is a bivalent hydrocarbon radical containing 1 to 21 carbon atoms. These compounds may be homopolymerized or copolymerized with a different polymerizable monomer (e.g., a lower alkyl acrylate or methacrylate). The polymers are useful for application to fibrous materials, for example, to wool to make it shrink resistant.

3,736,342
PROCESS FOR PRODUCING TRIALKOXYALUMINUM

Eiichi Ichiki, Kazuo Iida, Michio Kozai, and Yoshihiro Kondo, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Higashi-ku, Osaka, Japan

No Drawing. Filed July 27, 1971, Ser. No. 166,630

Claims priority, application Japan, Aug. 18, 1970, 45/72,641

Int. Cl. C07f *5/06*

U.S. Cl. 260—448 AD **14 Claims**

A trialkoxyaluminum is produced from an alkylaluminum compound,

wherein R_1 and R_2 represent alkyl groups having 2 to 30 carbon atoms, and R_3 an alkyl or alkoxy groups having 2 to 30 carbon atoms through oxidation by contacting the alkylaluminum compound with a molecular oxygen-containing gas in a state of film having a thickness of not more than 5 mm., preferably not more than 3 mm., at −20° to 150° C., preferably 0° to 100° C. under a pressure of not more than 50 kg./cm.² absolute, preferably 0.5 to 40 kg./cm.² absolute.

3,736,343
LOWER ALKYL 3-(5-CHLOROSALICYLIDENE) DITHIOCARBAZATES
John F. Olin, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Original application Aug. 13, 1969, Ser. No. 849,902, now Patent No. 3,629,447. Divided and this application May 3, 1971, Ser. No. 139,966
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 A 5 Claims

Control of the scab fungus, *Venturia inaequalis*, employing a lower alkyl 3-(5-chlorosalicylidene)dithiocarbazate.

3,736,344
LOW MOLECULAR WEIGHT ACYL PEROXYCARBONIC ESTERS
Roger N. Lewis, Pinole, and Ronald L. Friedman, San Rafael, Calif., assignors to Argus Chemical Corp., Brooklyn, N.Y.
No Drawing. Original application Dec. 26, 1967, Ser. No. 693,187, now Patent No. 3,585,232. Divided and this application Jan. 8, 1971, Ser. No. 105,130
Int. Cl. C07c *69/00*
U.S. Cl. 260—463 6 Claims

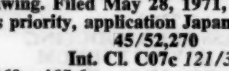
Low molecular weight (4–7 carbon atoms) acyl peroxycarbonic aliphatic esters.

3,736,345
STEROID-LIKE COMPOUNDS AND METHOD OF SYNTHESIS
Marinus Los, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of abandoned application Ser. No. 834,492, June 18, 1969. This application May 18, 1971, Ser. No. 144,687
Int. Cl. C07c *121/02, 121/48*
U.S. Cl. 260—465 D 3 Claims

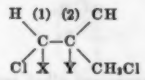
This invention relates to novel steroid-like compounds, a method for the synthesis thereof as intermediates for preparing other steroids and for the use of such compounds as estrogenic, androgenic or antiovulatory agents in the treatment of domestic and laboratory animals.

3,736,346
METHOD FOR THE PRODUCTION OF 1,1,3-TRIALKOXY-2-CYANOPROPANES
Masaaki Tsurushima, Kyoto, and Kozo Yatani, Yamaguchi, Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan
No Drawing. Filed May 28, 1971, Ser. No. 148,147
Claims priority, application Japan, June 15, 1970, 45/52,270
Int. Cl. C07c *121/34*
U.S. Cl. 260—465.6 5 Claims

The present invention relates to a process for the production of a 1,1,3-trialkoxy-2-cyanopropane of the formula



wherein R stands for a lower alkyl having 1 to 3 carbon atoms, which comprises reacting a chlorocyanohydrocarbon of the formula



wherein X stands for hydrogen and Y stands for chlorine atom, or X and Y form together a bond between the carbon atom at the 1-position and at the 2-position, with an alkali metal alcoholate or with an alcoholic alkali metal hydroxide, the alcohol for the alcoholate or alcoholic alkali metal hydroxide being an aliphatic monohydric alcohol of 1 to 3 carbon atoms, at a temperature of from 0° C. to the boiling point of the abovementioned alcohol.

3,736,347
SUBSTITUTED ALKENOIC ACIDS AND ESTERS AND SALTS THEREOF
Eric Harold Billett, Harlow, and David Miller, Sevenoaks, England, assignors to Beecham Group Limited, Brentford, Middlesex, England
No Drawing. Filed Aug. 3, 1970, Ser. No. 60,729
Claims priority, application Great Britain, Aug. 5, 1969, 39,123/69
Int. Cl. C07c *63/44, 69/76*
U.S. Cl. 260—469 11 Claims

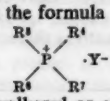
Substituted alkenoic acids having two phenyl or lower alkoxyphenyl groups and certain derivatives have been found to have estrogenic, e.g., anti-fertility properties for treating menopausal disorders or for estrogenic replacement. Typical compounds are 2-carboxy-5,5-diphenyl-4-methylpent-4-enoic acids, 2-methyl-4-ethyl-5,5-diphenyl-2-carboxypent-4-enoic acid and 2,4-dimethyl-5-phenyl-5-(4-methoxy-phenyl)pent-4-enoic acid. The new compounds are formulated as tablets and capsules for oral use and as injectables with sterile water.

3,736,348
PLASTICISING COMPOSITION
Arthur Gough and Alan John Tompsett, Stockton-on-Tees, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Aug. 20, 1970, Ser. No. 65,479
Claims priority, application Great Britain, Aug. 27, 1969, 42,710/69
Int. Cl. C07c *69/80*
U.S. Cl. 260—475 R 7 Claims

A plasticising composition suitable for use in PVC comprises di-esters of one or more C_4–C_{14} alkanols, particularly primary alkanols, with a mixture of acids including or consisting of o-phthalic, iso-phthalic, terephthalic, trimesic and trimellitic acids. The mixture of acids is advantageously obtained by oxidising a C_8 to C_{10} alkyl-aromatics fraction obtained as byproduct in benzene, toluene and xylene production processes.

3,736,349
FLAME-RETARDANT AGENTS FOR THERMOPLASTIC PRODUCTS
Helen Currier Gillham, Princeton, and Allan Ellis Sherr, Warren, N.J., and Harvey Gerald Klein, New York, N.Y., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Division of application Ser. No. 753,739, Aug. 19, 1968, now Patent No. 3,654,342, which is a division of application Ser. No. 479,599, Aug. 13, 1965, which in turn is a continuation-in-part of application Ser. No. 296,364, July 19, 1963, now abandoned. This application Oct. 27, 1970, Ser. No. 84,484
Int. Cl. C07c *57/02, 69/52*
U.S. Cl. 260—486 R 2 Claims

Compounds having the formula



wherein R^4 is carboxyalkenyl or carboalkoxyalkenyl, R^5, R^6 and R^7 are, individually, alkyl; alkenyl; hydroxy, imidazol or carboxy substituted alkyl; aryl; aralkyl; vinyl, halo, polyhalo or nitro ar-substituted aralkyl; dialkylaminoalkyl or carboalkoxyalkyl radicals and Y is bromine or chlorine.

3,736,350
AROMATIC DIAMINES CONTAINING ESTER GROUPS
Walter Meckel, Dusseldorf, and Erwin Muller, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 14, 1969, Ser. No. 866,373
Claims priority, application Germany, Oct. 17, 1968, P 18 03 635.6
Int. Cl. C07c *101/54*
U.S. Cl. 260—471 R 3 Claims

Novel aromatic diamines containing ester groups wherein the amino groups are in the m and/or p-position rela-

tive to the ester group, and with a substituent in the o-position to at least one amino group are useful to prepare polyurethane elastomers therefrom with an organic diisocyanate and an organic compound containing at least two hydroxyl groups and having a molecular weight of from about 800 to about 5000.

3,736,351

INTERMEDIATES FOR TRICYCLIC AMINES

Gerald Rey-Bellet and Hans Spiegelberg, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Mar. 3, 1967, Ser. No. 620,241, now Patent No. 3,527,806, dated Sept. 8, 1970. Divided and this application Apr. 23, 1970, Ser. No. 31,397

Int. Cl. C07c *119/00*

U.S. Cl. 260—501.21 3 Claims

N-alkylidene or aralkylidene-N-alkyl-N-[3-(substituted dibenzo[a,d]cycloheptene-5-yl)-propyl] ammonium salts and their preparation are disclosed, such salts possessing utility as intermediates in the preparation of 5-(aminopropylidene)-dibenzo[a,d]cycloheptenes having antidepressant activity.

3,736,352

PROCESS FOR RECOVERING ORGANIC SULFONYL HALIDES

Carl D. Kennedy and Allan J. Lundeen, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Continuation-in-part of application Ser. No. 868,922, Oct. 29, 1969. This application Apr. 7, 1972, Ser. No. 242,245

Int. Cl. C07c *143/70*

U.S. Cl. 260—543 R 10 Claims

Organic monosulfonyl halides are purified. A mixture comprising organic sulfonyl halides and unreacted paraffins is deparaffinized by admixing with a nitroalkane having 2 to 6 carbon atoms, cooling to precipitate the paraffin, and removing the solid paraffin from the liquid. Prior to deparaffinization, the mixture can be extracted with a selective solvent such as nitromethane to extract organic polysulfonyl halides and leave a mixture comprising monosulfonyl halides and paraffin, which is then deparaffinized. Subsequent to deparaffinization of a mixture comprising organic sulfonyl halides and unreacted paraffins, the polysulfonyl halides can then be extracted with a selective solvent such as nitromethane to leave purified monosulfonyl halides as a product.

3,736,353

PROCESS FOR PRODUCTION OF MELLITIC ACID

Eugene Paul Gosselink, Colerain Township, Hamilton County, and John H. Henderson, Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,019

Int. Cl. C07c *51/26*

U.S. Cl. 260—523 A 9 Claims

An improved process for synthesizing mellitic acid by two-stage nitric acid oxidation of hexakis(methoxymethyl)benzene. Specification of particular reaction procedures maximizes product yield and minimizes the need for expensive high pressure reaction equipment.

3,736,354

PROCESS FOR THE PRODUCTION OF ACRYLIC ACID

Masaya Yanagita, Tokyo, Masao Kitahara, Chiba-shi, and Yoshimichi Abe, Tokyo, Japan, assignors to Rikagaku Kenkyusho, Saitama-ken, Japan

Filed May 8, 1969, Ser. No. 823,112

Claims priority, application Japan, May 13, 1968, 43/32,102; June 12, 1968, 43/89,358

Int. Cl. C07c *51/26*

U.S. Cl. 260—530 N 9 Claims

A high yield process for producing pure acrylic acid by the catalytic vapor phase oxidation of acrolein with molecular oxygen using a highly active catalyst comprising an oxide or an oxygenated compound of vanadium, and molybdenum, and at least one of the elements of Ge, U, Mn, Cu, Au and Ba, or at least one of the elements of Se, Co, Pb, Ag, Mg, B, W, Sr, Ca, Zn and Cd.

3,736,355

PROCESS FOR THE PREPARATION OF UNSATURATED ACIDS

Mauro Croci, deceased, late of Novara, Italy, by Angelo Croci and Margherita Biagioni, heirs, and Enrico Cavaterra, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Filed Dec. 12, 1969, Ser. No. 884,734

Claims priority, application Italy, Dec. 16, 1968, 25,137/68

Int. Cl. C07c *51/32, 57/04*

U.S. Cl. 260—533 N 2 Claims

Alpha-beta unsaturated olefins, particularly propylene, are oxidized in the vapor phase by molecular oxygen, with the production of the corresponding unsaturated carboxylic acids, particularly acrylic acid.

3,736,356

ARYLSULFONYLFORMAMIDOXIMES

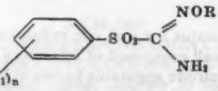
Uwe D. Treuner, Regensburg, Germany, assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Oct. 19, 1971, Ser. No. 190,693

Int. Cl. C07c *103/10*

U.S. Cl. 260—562 R 11 Claims

Arylsulfonylformamidoximes of the general formula



are useful as antimicrobial agents, hypoglycemic agents and antiinflammatory agents.

3,736,357

HIGH MOLECULAR WEIGHT MANNICH CONDENSATION PRODUCTS FROM TWO DIFFERENT ALKYL-SUBSTITUTED HYDROXY-AROMATIC COMPOUNDS

Edmund J. Piasek, Chicago, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 502,368, Oct. 22, 1965, now Patent No. 3,539,633, dated Nov. 10, 1970. This application Apr. 14, 1969, Ser. No. 816,124

Int. Cl. C07c *91/28*

U.S. Cl. 260—570.5 P 5 Claims

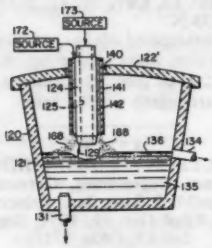
Products of the condensation of (1) a high molecular weight alkyl - substituted hydroxyaromatic compound whose alkyl substitutuent has upward from 40 to 20,000 carbon atoms, (2) a lower molecular weight alkyl-substituted phenol whose alkyl-substituent has 2 to 20 carbon atoms, (3) an amine having two primary amino (—NH_2) groups and (4) an aldehyde in the respective molar ratio of reactants of 2.0:0.7–1.0:1.4–2.0:2.8–4.0, are novel ashless-type (metal free) mineral-oil soluble addition agents having dispersant detergent and anti-oxidant functions affording anti-sludge and anti-varnish deposition and corrosion inhibition in crankcase lubricating compositions subjected to low or high temperature in-service use. Such condensation products are prepared either by single step reaction conducted by subjecting all four of the reactants in the stated molar ratio of reactants to a single condensation reaction under known Mannich condensation reaction conditions or by a two step reaction wherein reactants (1), (3) and (4) are first subjected to Mannich condensation conditions in the respective molar ratio of 2:1.4–2.0:1.4–2.0 and the resulting first step product is further condensed with reactants (2) and (4) used in the respective molar ratio of 0.7–1.0:1.4–2.0.

ELECTRICAL

3,736,358
PROCESS FOR IRON ORE REDUCTION AND ELECTRIC FURNACE FOR IRON ORE REDUCTION HAVING AT LEAST ONE NONCONSUMABLE ELECTRODE

Serafino M. DeCorso, Pittsburgh, and Armin M. Bruning, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 584,799, Oct. 6, 1966, abandoned. This application July 30, 1971, Ser. No. 167,820
Int. Cl. H05b 7/08
U.S. Cl. 13—9 **2 Claims**

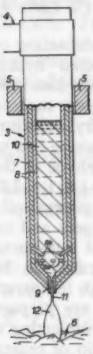


Furnace apparatus for iron ore reduction comprises a furnace having a wall composed of refractory material and nonconsumable electrode apparatus having at least one axially extending passageway therethrough mounted in the furnace, and means for energizing the electrode apparatus and producing an arc which melts the ore and liquifies the same.

3,736,359
ELECTRIC FURNACE

Brian Bowman, Geneva, Switzerland, assignor to British Steel Corporation, London, England

Filed Mar. 29, 1972, Ser. No. 239,107
Int. Cl. H05b 7/08
U.S. Cl. 13—9 **17 Claims**

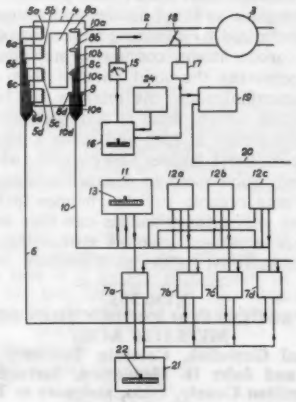


Particulate metal in flowable form or liquid metal is continually dispensed on to the charge in the furnace vessel through a tubular non-consumable electrode constituting a reservoir for this metal. The metal discharges through a nozzle on the tip of the electrode and an arc is sustained in the metal flowing between this nozzle and the charge surfaces. In the case of particulate metal this would normally comprise only part of the total metal charge ultimately in the furnace, unless the application is in respect of vacuum arc re-melting or refining where it would constitute the whole charge. Where liquid metal is employed this only constitutes a small proportion of the total charge. In the latter embodiment starting presents no problem since a conductive path is provided but, with particulate metal, where a conductive path is not provided initially, starting is effected with the aid of an auxilliary electrode.

3,736,360
CONTROL SYSTEM FOR VACUUM FURNACES

Carl Bergman, and Paul Larsson, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 27, 1971, Ser. No. 192,999
Claims priority, application Sweden, Oct. 27, 1970, 14477/70
Int. Cl. F27d 7/06
U.S. Cl. 13—24 **10 Claims**



A control system for an electrically heated furnace for sintering powder bodies, especially bodies of hard metal, has a vacuum pump connected to the interior of the furnace chamber by a suction conduit. The furnace includes a plurality of heating elements for different zones, a temperature sensitive instrument for each zone and a controlled measuring instrument for one of the zones which is the master zone. These instruments are connected to a master regulator for the furnace and slave regulators for the individual zones. A throttle valve in the vacuum conduit, or a controlled tap connected to the vacuum conduit, make it possible to keep the pressure in the furnace constant despite the fact that the pump runs at a constant speed. A pressure-sensing member connected to the vacuum conduit is also connected to the regulators for the heating elements.

3,736,361

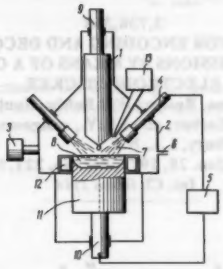
METHOD FOR THE PLASMA REMELTING OF A CONSUMABLE METAL BAR IN A CONTROLLED ATMOSPHERE

Viktor Iosifovich Lakomsky, ulitsa Bastionnaya, 10, kv. 30; Oleg Semenovich Zabarilo, ulitsa Chapaeva, 2/16, kv. 3; Gennady Fedorovich Torkhov, ulitsa Kapitanovskaya, 28, kv. 65, all of Kiev; Igor Stepanovich Pryanishnikov, ulitsa Sovetskaya, 2/102, kv. 27, Elektrostal Moskovskoi Oblasti; Valentin Vasilievich Topilin, ulitsa Koreshkova, 12, kv. 8, Elektrostal Moskovskoi Oblasti; Michail Markovich Kljuev, ulitsa Sovetskaya, 15, kv. 6, Elektrostal Moskovskoi Oblasti, and Vladimir Nikiforovich Zhuchin, ulitsa Mira, 2, kv. 77, Elektrostal Moskovskoi Oblasti, all of U.S.S.R.

Filed June 14, 1971, Ser. No. 152,556

Int. Cl. H05b 7/00

U.S. Cl. 13—34 3 Claims



A method for the plasma-arc remelting of a consumable metal bar into ingots under controlled atmospheric conditions in which remelting is effected through the use of plastmatrons which serve for heating nitrogen gas to the plasma-state and feeding it together with activated metal for its remelting and alloying, and whereby an ingot is preformed in a cooled mould which is coupled to a power source.

3,736,362

APPARATUS FOR PRACTISING RESUSCITATION BY INSUFFLATION AND EXTERNAL HEART MASSAGE

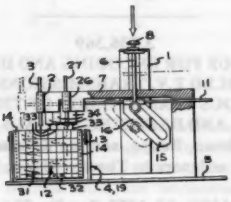
Asmund S. Laerdal, Stavanger, Norway

Filed Dec. 4, 1970, Ser. No. 95,078

Claims priority, application Germany, Dec. 11, 1969, P 19 62 083.8

Int. Cl. G09b 23/32

U.S. Cl. 35—17 9 Claims



A practising apparatus for a training of resuscitation by synchronized insufflation and external heart massage in which a dummy torso is provided with an imitation thorax and imitation lungs. Writing means associated with said imitation thorax and lungs records on an advanceable record sheet the movements of the lungs and thorax in insufflation and heart massage.

3,736,363

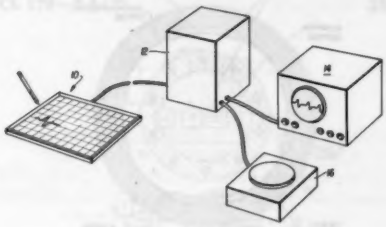
PHYSIOLOGIC FUNCTION SIMULATOR

Lee R. Baessler, Manhattan Beach; Adelbert W. Vallensi, Los Angeles, and Harvey F. Glassner, Carson, all of Calif., assignors to Humetrics Corporation, Los Angeles, Calif.

Filed Nov. 9, 1971, Ser. No. 196,997

Int. Cl. G09b 23/28

U.S. Cl. 35—17 7 Claims



A method and apparatus for selectively and repetitively providing an analog electrical signal. The desired waveform may be drawn on a pen/digital device and the digital Y coordinate signal stored. The storage may thereafter be cyclically addressed by the X coordinate signal for repetitive reproduction of the waveform.

3,736,364

ELECTRIC POWER TRANSMISSION CABLE WITH EVAPORATIVE COOLING SYSTEM

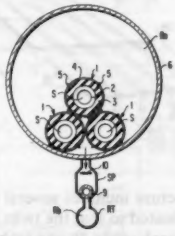
Hiroshi Kubo, Osaka, Japan, assignor to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed May 30, 1972, Ser. No. 257,622

Claims priority, application Japan, May 5, 1971, 46/36828; June 22, 1971, 46/41576

Int. Cl. H01b 7/34

U.S. Cl. 174—11 R 9 Claims

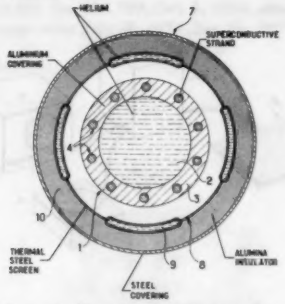


This invention provides an electric power transmission cable with an evaporative cooling system in which a valve device is provided to separate the vapor phase coolant from the liquid and vapor phase mixture coolant or to control the amount of the whole coolant. The cooling system is divided into two types, that is, an R type arrangement and an L type arrangement. In the R type arrangement, an insulating layer is pervious to gas, and the coolant penetrates the insulating layer to flow out of the cable conductor, thus evaporative cooling may be accomplished in the radial direction during the process of the penetration. In the L type arrangement, the coolant circulates in the longitudinal direction to gradually become a gas-liquid mixture and finally a vapor phase coolant, thereby accomplishing refrigeration. The valve device according to this invention may function to separate the vapor phase from the liquid and vapor phase mixture coolant, and also to control the amount of the whole coolant in either the R or L type arrangement.

3,736,365
CRYOGENIC CABLE

Jean-Claude Bobo, Saint-Michel-sur-Orge; Andre Dubois, Orsay, and Marcel Aupoix, Paris, all of France, assignors to Compagnie Generale d'Electricite, Paris, France

Filed Apr. 14, 1972, Ser. No. 244,166
Claims priority, application France, Apr. 14, 1971, 7113090
Int. Cl. H01v 11/00; H01b 7/34
U.S. Cl. 174—15 C 5 Claims

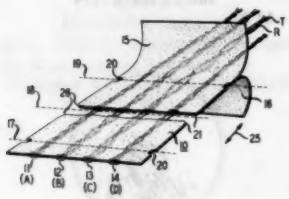


A cryogenic cable enabling the transfer of considerable electric power, characterized in that the electrical insulating means, between two coverings capable of being brought to different electric potentials, consists essentially of a volume of gas at a pressure between 10^{-5} and 10^{-2} Torr.

3,736,366
MASS BONDING OF TWISTED PAIR CABLES

Albert Malcolm Wittenberg, Short Hills, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 27, 1972, Ser. No. 248,311
Int. Cl. H01b 11/04
U.S. Cl. 174—34 5 Claims



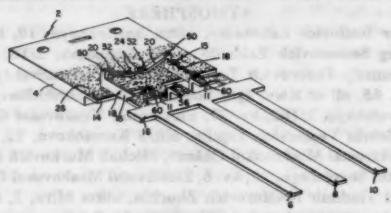
A tape cable structure includes several sets of twisted wire pairs which are laminated so that the twist points are in a fixed phase relation with each other. In one embodiment, even twist length ratios between the adjacent twisted pairs are used. The relationship between the twist points can be adjusted to permit mass termination of the cable. When severed as by a heat knife along a transverse section of the tape at which the twists of all pairs are in phase, the two tape sections are drawn apart to expose substantially parallel bare wires ready for connection.

3,736,367
LEAD FRAMES AND METHOD OF MAKING SAME

Frederick Jay Helnlen, Etters, and Randy Marshall Manning, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 9, 1971, Ser. No. 132,852
Int. Cl. H01l 5/00
U.S. Cl. 174—52 S 3 Claims

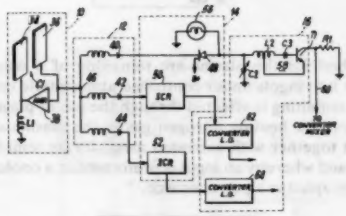
The disclosure relates to a lead frame having a plate-like heat sink portion and three leads, one of which is integral with the heat sink, are manufactured by blanking heat sink and leads, bending the integral lead relative to the heat sink, forming ends of the remaining leads, and again bending integral leads so that leads are in a plane which is parallel to, and spaced from the heat sink.



3,736,368
TECHNIQUE FOR ENCODING AND DECODING T.V. TRANSMISSIONS BY MEANS OF A CODED ELECTRONIC TICKET

Joseph H. Vogelman, Roslyn; Will Baltin, Huntington, and Ira Kamen, Lloyd Harbor, all of N.Y., assignors to Theatre Vision, Inc., Woodbury, L.I., N.Y.

Filed Jan. 28, 1972, Ser. No. 221,700
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 27 Claims



A television program is transmitted at a carrier frequency outside the regular television reception channels. The subscriber-viewer is provided with a coded ticket which, when inserted into a receptacle, establishes a resonant frequency for a tuned circuit in that receptacle. The resonant frequency signal is processed to actuate a converter local oscillator which translates the carrier of the received program signal to a designated television channel of a conventional television receiver that is not normally employed for receiving broadcast television programs.

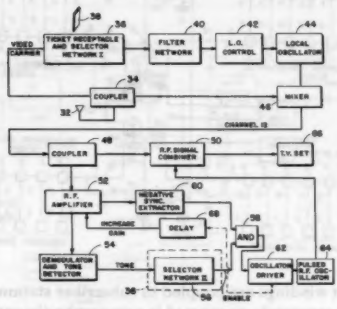
3,736,369
TECHNIQUE FOR ENCODING AND DECODING SCRAMBLED T.V. TRANSMISSIONS BY THE SIMULTANEOUS TRANSMISSION OF THE ENCODING AND DECODING SIGNALS

Joseph H. Vogelman, Roslyn, and Ira Kamen, Lloyd Harbor, both of N.Y., assignors to Theatre Vision, Inc., Woodbury, N.Y.

Filed Mar. 13, 1972, Ser. No. 234,014
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 12 Claims

A subscriber television system in which the television signal is encoded at the transmitter in a manner that causes the video and/or audio portion of the signal to be received in a scrambled form at the receiver. A decoder at the receiver operates in response to the subscriber's use of a program-select and decoding element having a conducting pattern thereon. When

a program-select ticket having the proper conducting pattern is utilized, a network on the decoder produces an enabling



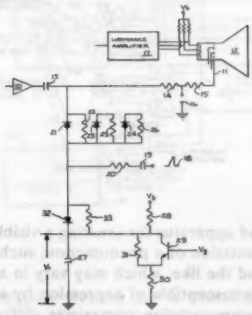
signal which actuates the decoding or unscrambling circuitry at the receiver to thereby decode the received, scrambled signal.

3,736,370

IMPROVED CHROMA CLAMPING CIRCUIT

Roger C. Thielking, North Syracuse, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Jan. 18, 1971, Ser. No. 107,229
Int. Cl. H04n *9/00, 5/18*
U.S. Cl. 178—5.4 R **10 Claims**



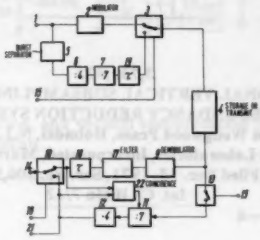
A clamping circuit for use in a color television receiver. The DC voltage level of color signal transmission paths is reestablished during horizontal retrace periods by applying a clamping pulse derived from the horizontal output transformer directly to the transmission path. The maximum excursion of the voltage thus applied is limited by a diode reverse-biased by means of a reference voltage network, which includes a transistor resistively coupled between a voltage source and ground. The transistor passes a constant flow of current such that changes in the value of the voltage source are added to the reverse bias on the limiting diode. The maximum voltage of the clamping pulse is thus varied to reflect changes in the value of the voltage source.

3,736,371

METHOD AND ARRANGEMENT FOR REDUCING THE COLOR LINE NOISE IN THE STORAGE AND TRANSMISION OF COLOR TELEVISION SIGNALS

Gerhard Krause, Ebersberg, Munich, Germany, assignor to Robert Bosch Fernsehanlagen, GmbH, Stuttgart, Germany

Filed Sept. 18, 1970, Ser. No. 73,571
Claims priority, application Germany, Sept. 22, 1969, P 19 47 826.3
Int. Cl. H04n *5/78, 5/04*; G11b *5/04*
U.S. Cl. 178—5.4 CD **23 Claims**



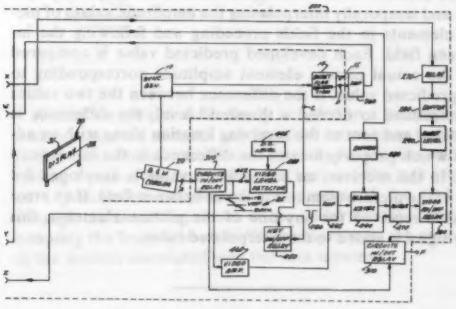
The color synchronizing signal is derived from the color television signal before the latter is modulated onto a carrier. After modulation a signal derived from the color synchronizing signal by frequency multiplication and/or division, is added to the modulated color television signal. The derived signal can be the blanking value or the synchronizing value. Before the television signal is demodulated, the derived signal is removed, and the color synchronizing signal reobtained by a mathematical operation that is a reciprocal of the first operation.

3,736,372

ELECTRICAL CIRCUIT

Peter W. Vanderwel, 780 North Mitzie Drive, North Muskegon, Mich.

Filed Feb. 18, 1972, Ser. No. 227,386
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.4 R **17 Claims**



An electrical circuit for providing preselected two color television signals in response to luminance signals from a black and white video signal source at a television transmitting station. The electrical circuit includes a frequency divider which receives color subcarrier signals and provides sub-multiple frequency signals therefrom. A pair of color signal generating circuits are coupled to the frequency dividing circuit, receive the sub-multiple frequency signals therefrom and provide color signals having hue and saturation parameters which can be adjusted in a predetermined manner to provide

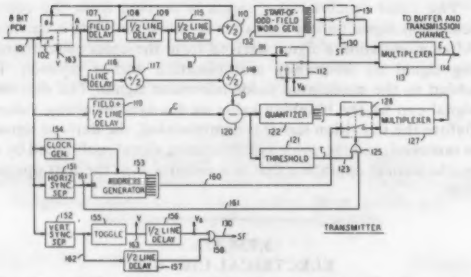
the desired color output signals therefrom. A video level detecting circuit detects the amplitude of the luminance signals and develops a control signal representative thereof. An electrically operated switching circuit receives the color signals from each color generating circuit and the control signal from the video level detecting circuit and applies one or the other of the color signals to a mixer circuit in response to the control signal. A mixer circuit combines the color signals with the luminance signals in timed relationship to provide composite two color television signals corresponding in a predetermined manner to the original black and white video signals.

3,736,373

CONDITIONAL VERTICAL SUBSAMPLING IN A VIDEO REDUNDANCY REDUCTION SYSTEM

Roger Fabian Wedgwood Pease, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hills, N.J.

Filed Dec. 13, 1971, Ser. No. 206,991
Int. Cl. H04n *7/12*
U.S. Cl. 178—6 **11 Claims**



Alternate fields of a two-field interlaced video signal are transmitted without encoding from a transmitting encoder to a receiving location. In the encoder, a predicted value for each picture element in an in-between field is developed by spatially and temporally interpolating the amplitude values of picture elements in the fields preceding and following the in-between field. Each developed predicted value is compared with the actual picture element amplitude corresponding to that predicted value. If the difference between the two values is determined to exceed a threshold level, the difference is quantized and sent to the receiving location along with an address which properly locates the difference in the in-between field. In the receiver, an interpolated value is developed for each of the picture elements in the in-between field. If an error signal is received for any one of the picture elements, this error signal is added to the interpolated value.

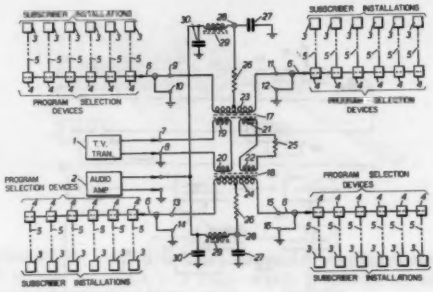
3,736,374

WIRED BROADCASTING SYSTEMS

Eric J. Gargini, West Drayton, England, assignor to Communications Patents Limited, London, England

Filed June 2, 1970, Ser. No. 42,772. The portion of the term of this patent subsequent to Sept. 15, 1980, has been disclaimed.
Claims priority, application Great Britain, June 3, 1969, 27,927/69
Int. Cl. H04n *7/10*
U.S. Cl. 178—6 **6 Claims**

A hybrid coupling transformer system is used in wired broadcasting systems with two transformers coupled through a pair of series windings on the respective transformers carrying TV signals. A second winding is coupled in series anti-phase



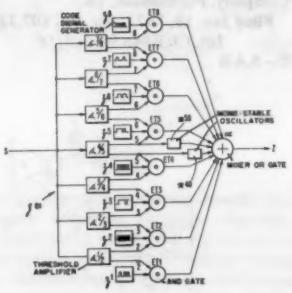
and output windings are coupled to subscriber stations. Audio signals are separately connected in some embodiments to centertopped output windings.

3,736,375

PROCESS AND APPARATUS FOR CREATING CODIFIED CARTOGRAPHIC REPRESENTATIONS OF VARIABLE QUANTITIES

Bernard Parnet, Courbevoie, France, assignor to Saint-Gobain Industries, Neuilly sur Seine, France

Filed Oct. 23, 1970, Ser. No. 83,476
Claims priority, application France, Oct. 27, 1969, 6936743
Int. Cl. H04n *5/14, 7/18*
U.S. Cl. 178—6.8 **26 Claims**



A process and apparatus for creating a visible coded cartographic representation of a phenomenon, such as luminosity, temperature and the like, which may vary in a given superficial field and is susceptible of expression by a characteristic quantity, the representation comprising differently hatched adjacent areas or zones each representing values of the phenomenon under investigation between selected threshold values thereof, superimposed traces representing one or more of said threshold values for purposes of reference, and superposed transverse contours at selected intervals representing point to point variations in the value of the phenomenon.

3,736,376

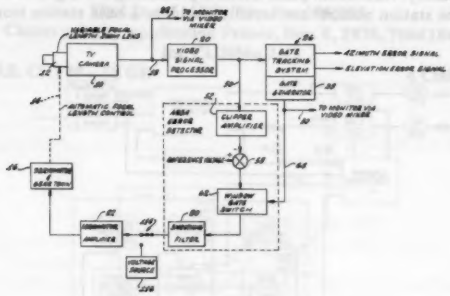
AUTOMATIC CONTROL SYSTEM FOR VIDEO TRACKER

Paul S. Kato, Jr., Torrance, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 30, 1967, Ser. No. 628,232
Int. Cl. H04n *3/00*
U.S. Cl. 178—6.8 **14 Claims**

A control system for video trackers with monitor receivers on which tracking gate windows are displayed. Signals from a

video tracker are shaped, gated and filtered, and then utilized to automatically maintain a substantially constant ratio between the window size and the portion of the window occupied by the image of the object being tracked. For a camera with zoom lens, the signals are used to operate a motor drive for the lens. For a camera with fixed focus lens, the signals are used for automatic gate size control in the video tracker.



3,736,377

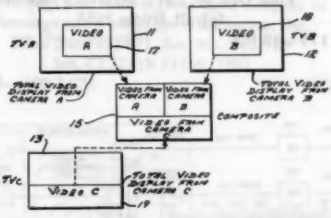
MULTIPLE CHANNEL VIDEO SWITCHING SYSTEM

Robert H. Warren, Jr., 2102 E. Broadway Apt. 34, Mesa, Ariz.

Filed May 10, 1971, Ser. No. 141,559

Int. Cl. H04n 5/22

U.S. Cl. 178—7.2 **3 Claims**



Composite display system for a plurality of television cameras in which one camera develops synchronizing signals and video waveform switching signals for the other cameras using delays from one-shot multivibrator circuits. The video switching is performed by a circuit having dual gate insulated effect transistors with one gate of each being fed by a switching waveform signal and the other gate by the video signal from the corresponding camera.

3,736,378

VIDEO SIGNAL PROCESSING STAGE WHICH PERFORMS PLURAL FUNCTIONS

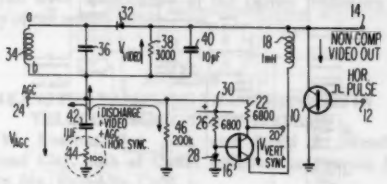
Peter Eduard Haferl, Adliswil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1972, Ser. No. 246,652

Int. Cl. H04n 5/52, 5/08, 5/10

U.S. Cl. 178—7.3 S **7 Claims**

A signal processing stage for a television receiver which performs the combined functions of video demodulation, automatic gain control voltage generation, horizontal synchronizing pulse separation, and vertical synchronizing pulse separation in a single circuit.



3,736,379

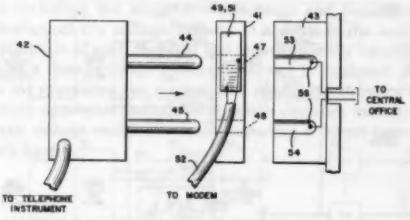
INDUCTIVE DATA COUPLER

Claude Ancelme Roichel Kagan, Hopewell Township, Mercer Cty., N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,642

Int. Cl. H04m 11/00, 1/00

U.S. Cl. 179—2 C **5 Claims**



A data terminal is inductively coupled to a telephone line without the need to make any physical connection to the line. In one embodiment, the invention comprises a slim unit containing a pair of flat coils which fits between the jack and plug of a jack-ended telephone. The prongs of the jack pass through the central aperture of the coils, thereby inductively coupling the line to the coils. The coils, in turn, are connected to the modem associated with the data terminal.

3,736,380

REMOTE CALL BACK TELEPHONE ANSWERING APPARATUS

Daniel Shadd, New Berlin, Wis., and Herman Haag, Buchengasse, Germany, assignors to Universal Telephone Inc., Milwaukee, Wis., by said Shadd

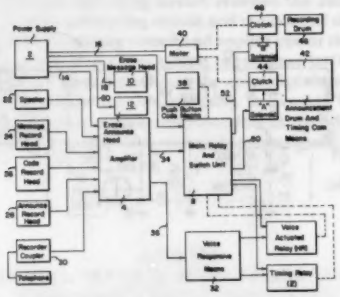
Filed Mar. 22, 1968, Ser. No. 728,377

Int. Cl. H04m 1/64

U.S. Cl. 179—6 E **1 Claim**

Remote control means for operating telephone message recording apparatus to play back callers' messages that have

been previously recorded on a recording drum. The invention is characterized by the provision of voice-code responsive



means for activating the playback means only when a given oral sound is presented at predetermined code-responsive timing intervals.

3,736,381

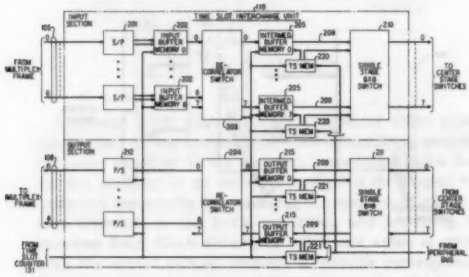
TIME DIVISION SWITCHING SYSTEM

Glover Douglas Johnson, Naperville; Keith Lynn Nicodemus, Wheaton; George Charles Schumacher, Glen Ellyn, and Matthew Francis Slana, Naperville, all of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 1, 1971, Ser. No. 185,748

Int. Cl. H04j *3/00*

U.S. Cl. 179—15 AQ **8 Claims**



A toll telephone switching system for switching PCM data among time division multiplex lines is disclosed. The system comprises a symmetrical time-shared space division network and interface circuits which buffer incoming PCM data and distribute the incoming data from a group of multiplex lines over a group of input ports of the network. The interface circuits also buffer outgoing PCM data at the output side of the network and distribute the data from a group of output ports of the network over a group of outgoing multiplex lines.

3,736,382

SERIALLY CONTENT ADDRESSABLE MEMORY CONTROLLED CALL FORWARDING SYSTEM

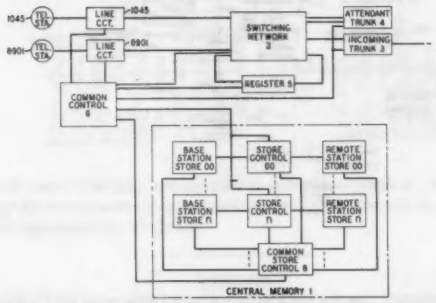
Edwin Julius Braun, and Roderic Romero, both of Boulder, Colo., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 15, 1971, Ser. No. 189,597

Int. Cl. H04m *3/54*

U.S. Cl. 179—18 BE **20 Claims**

A call forwarding arrangement for use in a telephone switching system wherein a call directed to a base station may be established to a remote station arbitrarily chosen by either the base or an attendant station user. Base station and attendant station users are each enabled to dial remote station directory numbers into a digit register. Digital pulse trains representing the registered remote station number are serially read into an idle remote station store of a content addressable memory. Additional pulse trains representing the digits of the base station number are serially read into a base station store



associated with the remote station store. The memory is interrogated by simultaneously comparing the serial digital pulse trains of a called station number with serial digit pulse trains read from every base station store. On a pulse match condition digital pulse trains are serially read from the remote station store associated with the matched base station store into the telephone switching system in order that a call may be established to the chosen remote station.

3,736,383

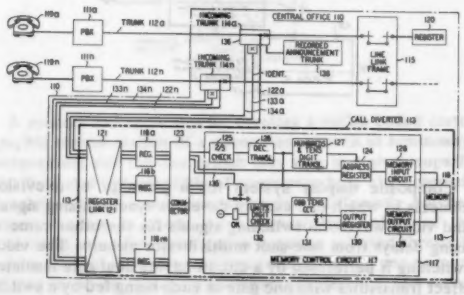
MULTICUSTOMER CENTRALIZED CALL DIVERTER

Theodore Le Baron, Oak Park, Ill., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed Oct. 28, 1971, Ser. No. 193,448

Int. Cl. H04m *3/38*

U.S. Cl. 179—18 HA **9 Claims**



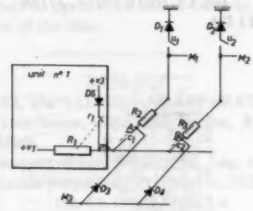
A central office located call diverter for permitting a multitude of PBX (Private Branch Exchange) customers to restrict outgoing calls on PBX trunks. A diverter register registers the first three digits dialed over a diverter trunk on each outgoing call and a common memory control unit compares them with a customer selected and changeable repertory of allowed three-digit codes stored in a common memory. In response to the code comparison, the outgoing call is either terminated or allowed to be completed and all diverter equipment associated with the call is released to service another outgoing call.

3,736,384

MULTIPLE CONNECTION DEVICE FOR A TELEPHONE UNIT

Yves Mevel, Gilocourt par Orrouy, and Yves Renaudin, Montigny-les-Cormeilles, both of France, assignors to Societe Francais Des Telephones Ericsson, Colombes, Hauts-de-Seine, France

Filed Dec. 6, 1971, Ser. No. 205,097
Claims priority, application France, Dec. 8, 1970, 7044184
Int. Cl. H04q 3/42
U.S. Cl. 179—18 GE 4 Claims



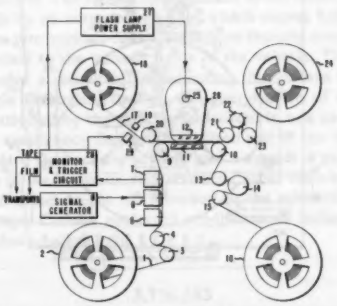
Device for multiple connection of a primary telephone unit to at least two secondary units by means of relay type selectors namely intended to respectively interconnect primary and secondary wires of a telephone exchange, comprising a relay in said primary unit and a main line to which the inputs of said secondary units are parallel-connected, said inputs being connected to a line fed with a positive potential controlling said secondary units, said primary unit further comprising a contact connected to another positive potential intended to fed said main line when a second secondary unit is connected to said primary element without disconnecting an already connected secondary unit.

3,736,385

STORAGE AND RETRIEVAL OF ANALOG INFORMATION WITH MAGNETOOPTIC READOUT

Robert K. Waring, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 1, 1971, Ser. No. 148,703
Int. Cl. G11b 11/10, 5/02
U.S. Cl. 179—100.2 CH 11 Claims



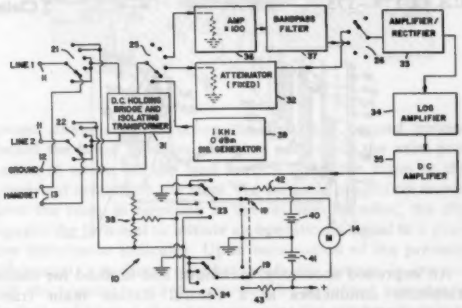
A method is disclosed for the storage and retrieval of analog information by magnetic recording of the information as a modulated carrier frequency on magnetic recording member such as magnetic tape followed by magneto-optic read out. The signal field from the tape is combined with a bias field constant with time and directed at an angle to the signal field from the tape so that a resultant field is produced for application to the magneto-optic surface which varies angularly with the intensity of the signal field. The direction of magnetization of elements of the magneto-optic film can be varied transiently by the signal and bias field, or, with suitable framing techniques storage type transfer to suitable magneto-optic surfaces can be accomplished. Read-out of the pattern of magnetization on the magneto-optic surface with polarized light effects full wave rectification of the carrier frequency and recovery of the analog information.

3,736,386

MEANS FOR SAMPLING TRANSMISSIONS IN TELECOMMUNICATION SYSTEMS

Deloss W. Everton, San Jose, and David D. Meacham, Redwood City, both of Calif., assignors to Pearson Electronics, Inc., Palo Alto, Calif.

Filed Sept. 24, 1970, Ser. No. 75,153
Int. Cl. H04b 3/46
U.S. Cl. 179—175.3 6 Claims



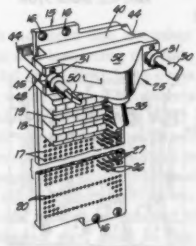
A method of sampling transmissions in telecommunication systems including the steps of rectification and logarithmic amplification of the voltage present at a point in the system and application of such rectified and logarithmically amplified voltage to a linear voltage indicating device is disclosed. Apparatus for practicing the method and particular circuitry for use in such apparatus is described, which circuitry includes a half wave voltage rectifier circuit including a direct current feedback loop.

3,736,387

METHOD AND ACCESSORY FOR TESTING THE SERVICEABILITY OF TELEPHONE CONDUCTORS

John T. Thompson, 244 Loring St., Los Angeles, Calif., and George W. Gillemot, 2331 20th St., Santa Monica, Calif.

Filed Dec. 14, 1970, Ser. No. 97,531
Int. Cl. H04m 3/22
U.S. Cl. 179—175 6 Claims



An improved accessory, technique and method for testing telephone conductors at a central station main frame equipped with terminal boards having a separate contactor for each conductor. The testing equipment is connectable to the

conductors terminating at any terminal board through a flexible patching cable provided at one end with a separate contact pin for each terminal board contactor and with manually operable clamping jaws for holding these pins assembled to the contactors. In larger installations the patching cable is made in separable sections, a plurality of one of these sections being permanently installed and selectively connectable to the test equipment using a mobile patching section to connect a terminal board to the adjacent end of the nearest end of the permanently installed sections.

3,736,388

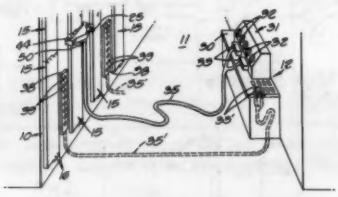
METHOD AND ACCESSORY FOR TESTING THE SERVICEABILITY OF TELEPHONE CONDUCTORS

John T. Thompson, 244 Laning Street, Los Angeles, Calif., and George W. Gillemot, 2331 20th Street, Santa Monica, Calif.

Division of Ser. No. 97,531, Dec. 14, 1970. This application Dec. 27, 1971, Ser. No. 212,576

Int. Cl. H04m 3/22

U.S. Cl. 179—175 **7 Claims**



An improved accessory, technique and method for testing telephone conductors at a central station main frame equipped with terminal boards having a separate contactor for each conductor. The testing equipment is connectable to the conductors terminating at any terminal board through a flexible patching cable provided at one end with a separate contact pin for each terminal board contactor and with manually operable clamping jaws for holding these pins assembled to the contactors. In larger installations the patching cable is made in separable sections, a plurality of one of these sections being permanently installed and selectively connectable to the test equipment using a mobile patching section to connect a terminal board to the adjacent end of the nearest end of the permanently installed sections.

3,736,389

CONTACT CONNECTION

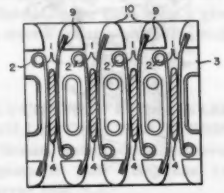
Herbert Stroppel, Basel, and Zeljko Radovic, Sissach, both of Switzerland, assignors to Sybron Corporation, Rochester, N.Y.

Filed Oct. 5, 1971, Ser. No. 186,643

Claims priority, application Germany, Dec. 31, 1970, P 20 64 688.2

Int. Cl. B60l 5/08

U.S. Cl. 191—48 **2 Claims**



Disclosed is a device for carrying an electrical signal to a moving trolley as the trolley moves past a fixed control station, the electrical contact at the control station being biased to move transversally of the trolley track, and a pair of opposed contacts on the trolley which are biased together for engaging each side of the fixed contact as the trolley moves by the station, the leading portion of the moving contacts being shaped to funnel the fixed contact between them.

3,736,390

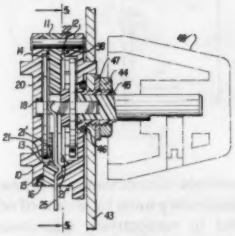
ROTARY SWITCH ASSEMBLY WITH PRINTED CIRCUIT ROTOR AND MULTILAYER HOUSING FEATURES

Joseph LaRue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 10, 1971, Ser. No. 206,665

Int. Cl. H01h 19/58, 21/78

U.S. Cl. 200—11 DA **32 Claims**



A rotary switch is provided which is adaptable for being stacked in multiple layers for multi-function use by a single control shaft. A printed circuit board and a brush member are supported in a dust-proof housing in contacting relation and means are provided for rotating one of the board and the brush relative to the other to any of a predetermined number of distinct positions. Additionally, the inputs and outputs of the switch are all aligned in a single plane.

3,736,391

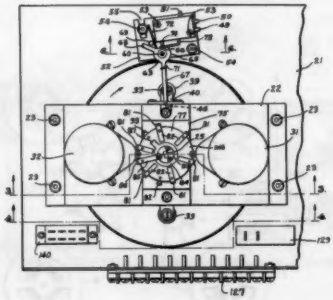
TIMING DEVICE WITH ADJUSTABLE CAM OPERATED MICROSWITCH ASSEMBLY

Lee Caviar, 705 E. 31st St., Kansas City, Mo.

Filed May 1, 1972, Ser. No. 249,201

Int. Cl. H01h 43/10

U.S. Cl. 200—38 R **6 Claims**



A timing disk has switch controlling members mounted in a circular series about its axis of rotation and independently rotatable about their axes to adjust the position of a pin projecting latterly from a radially outwardly extending arm on each controlling member. The movable contact of a microswitch, biased toward a first position controlling a first motor for driving the disk, is movable into a second position controlling a second motor, driving the disk at a much slower speed than the first motor. A cam having an arcuate high por-

tion is rotatable about an axis out of the pin path and has a finger movable with it projecting into this path to rotate the cam through an arc dependent on how long the pin contacts the finger. A switch operating member holds the movable contact in its second position as long as a follower engaging the operating member engages the cam high portion. A spring rotates the cam to engage its low portion with the follower upon disengagement of the pin from the finger. A contact moving with the disk successively engages a circular series of stationary contacts concentric with the disk, each corresponding to a controlling member and each in the circuit of a different electrically operated valve. A ring contact concentric with and rotating with the disk has a gap and cooperates with a stationary contact to open both motor circuits upon completion of a rotation of the disk.

3,736,392

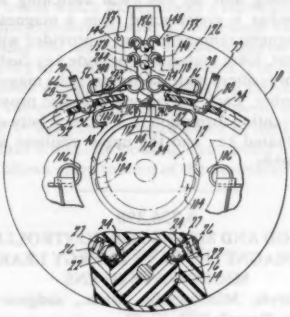
DIRECTIONAL SIGNAL APPARATUS

Robert M. Dyksterhouse, Blue Dot Farms, Rural Route 3, Charlevoix, Mich.

Continuation-in-part of Ser. No. 63,838, Aug. 14, 1970. This application July 15, 1971, Ser. No. 162,847

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.27 **34 Claims**



A switch which is mounted on the steering column of a vehicle and may be actuated to indicate either right or left turn information, right or left lane changing information or emergency information. The switch is transferred to the lane-change or turn mode by an actuator member which moves ball contact assemblies into various contact relations thereby making electrical contact to the various lights of the vehicle. The system also includes a circuit interconnecting the various lamps on the vehicle through a flasher, the energization of the lights being controlled by the turn signal switch. In one case a standard and emergency flasher are utilized and in the other case two standard flashers are utilized and a system is provided to short one of the lamps by means of the flasher thereby giving a sequential affect to the energization of the inboard and outboard lamps. Certain preferred modifications include a five-ball and three-ball switch.

3,736,393

POSITIVE RETAINED ACTUATION SWITCH

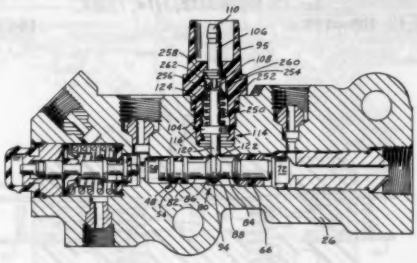
Myron L. Apple, and Harold W. Hughes, both of Saint Joseph, Mich., assignors to The Bendix Corporation, South Bend, Ind.

Filed Dec. 13, 1971, Ser. No. 207,365

Int. Cl. H01h *35/38, 13/52*

U.S. Cl. 200—82 D **2 Claims**

A warning switch having a housing with a central cavity separated by a first piston and a second piston into a first chamber and a second chamber. The first chamber is connected to a first pressure and the second chamber is connected to a second pressure. The first and second pistons are separated by a stem with an annular land section. The land section is flanked by annular ramps leading to a cylindrical section on the stem. A non-conductive body having a cylindrical bore is secured to the housing. A plunger member with an axial projection is located in the cylindrical bore and extends into the central cavity to contact the land section on the stem. A clip having a plurality of prongs is attached to the rear of the axial projection. A pressure differential between the first and



second chambers will move the first and second pistons toward the lower pressure chamber permitting the axial projection to move off the land section down the ramp to the cylindrical section on the stem. As the axial projection moves down the ramp in response to the resilient member, the clip engages the terminal to initiate an operational signal to a pressure differential indicator. Upon termination of the pressure differential, a resilient member holds the prongs in contact with the terminal until de-activated by equalized pressure in the first and second chambers returning the axial projection to the land section.

3,736,394

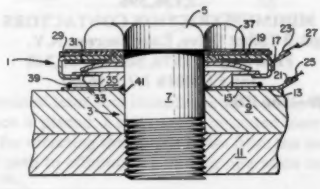
CONDITION SENSING ASSEMBLY POSITIONED AS WASHER

Don K. Rumbaugh, 1668 Los Altos Road, San Diego, Calif.

Filed Sept. 14, 1971, Ser. No. 180,284

Int. Cl. H01b *3/40*

U.S. Cl. 200—158 **6 Claims**



A sensing element mounted like a washer having an outer fiber layer bonded to and insulating the flat, circular top surface of an upper metal sheet, which, in cross section, is hook shaped on opposite, outer sides. The other side of the upper metal surface is insulated by a bottom fiber layer. A circular Belville spring washer contacts the bottom fiber layer on one side and a circular metal support structure on the other side. In cross section the support structure has an elongated vertical part extending from the shaft location outward, terminated by a flange which extends further under and to the end of the spring. The hook shaped part ends in the area under the flange. A point on the upper sheet is jointed to a tab to which an electrical lead is soldered. The bottom of the support is sweat soldered to a thin, circular metal sheet, the end of which at one point is jointed to a tab which extends past the top sheet and to which a second electrical lead is soldered. Upon

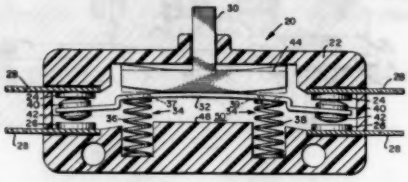
loosening of a nut or bolt with which the invention is used, the spring forces the upper and lower elements apart until the hook shaped part contacts the flange of the support, thereby completing an electrical circuit between the two leads which signals the loose condition.

3,736,395

DIRECT-ACTION SWITCH

Edwin A. Miller, 11 Old Elm Road, Bridgeport, Conn.

Filed Feb. 3, 1971, Ser. No. 112,258
Int. Cl. H01h 3/12, 3/14, 13/64
U.S. Cl. 200—159 A 10 Claims



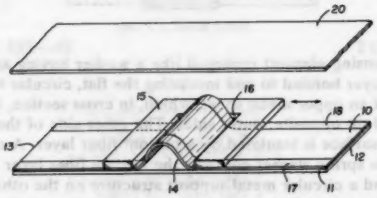
A movable blade incorporating conducting surfaces is disposed between an actuator and a biasing resilient fulcrum assembly, all of which are positioned within a housing. The movement of the actuator against the blade initially causes the blade to pivot about the fulcrum points of the fulcrum assembly. This pivoting movement causes the conducting end portions of the movable blade to increase the contact force with a first set of conductors mounted to the housing, creating a wiping contacting action. This causes an increasingly firm engagement between the conductors until the movement of the actuator prevents further pivoting and, instead, compresses the blade and the resilient fulcrum assembly sufficiently to wipingly break the initial contact, and move the conducting end portions of the blade into pressed contact with a second set of conductors mounted to the housing. When actuator pressure is removed, the biasing force of the resilient fulcrum assembly returns the blade and its conductors to their original position.

3,736,396

MINIMUM FRICTION CONTACTORS

Henry Siegel, 3 Talbot Drive, Lake Success, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,748
Int. Cl. H01h 1/16, 36/00
U.S. Cl. 200—166 BH 14 Claims



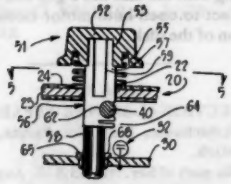
A device having a flexible ribbon member with conductive portions, selectively bulged or urged into contact with an adjacent cooperating unit having conductive portions. The location of the contact is controlled by an element or elements capable of translation parallel to the longitudinal axes of the ribbon and cooperating unit.

3,736,397

KEYBOARD SWITCH ASSEMBLY WITH PUSHBUTTON MAGNETIC LATCHING STRUCTURE FOR NON-OPERATIVE POSITION

Egon A. Pedersen, Diablo, Calif., assignor to The Singer Company, New York, N.Y.

Continuation of Ser. No. 86,678, Nov. 4, 1970, Pat. No. 3,693,123. This application Jan. 24, 1972, Ser. No. 220,053
Int. Cl. H01h 3/20
U.S. Cl. 200—169 PB 10 Claims



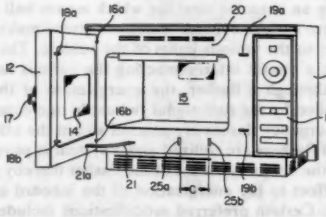
A keyboard comprising a plurality of key assemblies mounted in a mounting member and a base member. Each key assembly is provided with a magnet which provides both a magnetic latching and an electrical switching action. The mounting member is constructed from a magnetic material having low magnetic remanence and is provided with an upper layer of resilient, foam material to provide key cushioning and a lower layer of resilient material to space the magnet from the mounting member. Each key assembly is also provided with a means for preventing formation of a vacuum between the bottom of an actuated key and the upper resilient layer of the mounting member.

3,736,398

METHOD AND MEANS FOR CONTROLLING ELECTROMAGNETIC WAVE ENERGY LEAKAGE IN MICROWAVE OVENS

George A. Jarvis, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 15, 1971, Ser. No. 198,802
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 2 Claims



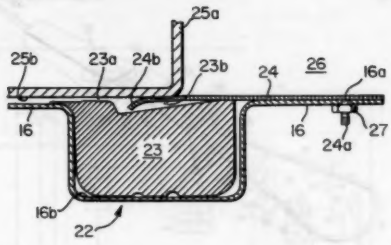
A method and means for controlling electromagnetic wave energy leakage in microwave ovens. The hinges, latches, and other pairs of metallic protruding members that are located in proximity of the perimeter of the door of the microwave oven are separated by distance equal to a multiple of ½ wave lengths of the fundamental operating frequency of the magnetron. A method for preventing the escape of an excessive amount of electromagnetic wave energy from around the perimeter of the microwave oven door including the steps of monitoring the field of electromagnetic wave energy in the vicinity of the perimeter of the microwave oven door and mounting a pair of metallic reflective projections across the path of any excessive leakage of electromagnetic wave energy.

3,736,399

ELECTROMAGNETIC WAVE ENERGY SEAL

George A. Jarvis, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Nov. 15, 1971, Ser. No. 198,803
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 15 Claims



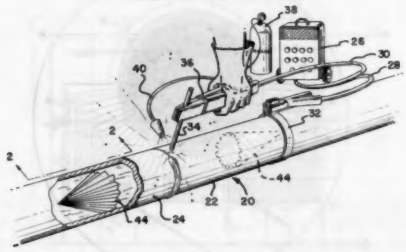
An improved electromagnetic wave energy seal for microwave ovens which incorporates a continuous capacitive-type seal that cooperates with a continuous choke-type seal for preventing the escape of electromagnetic wave energy from the cavity of such microwave ovens. The capacitive-type seal is a flexible seal plate which abuts the surface defining the opening of the cavity of the microwave oven, and the choke-type seal is an irregularly shaped piece of dielectric material located within a metallic housing and having a concave portion which allows entry therein of the perimeter of the flexible seal plate.

3,736,400

APPARATUS FOR DAMMING PIPE ENDS FOR WELDING

Jacob Spiegel, Philadelphia, Pa.; Albert Miller, Somerdale, N.J., and Irving Klukoff, Flushing, N.Y., assignors to Gilbreth Company, Philadelphia, Pa., by said Miller and Klukoff

Filed Aug. 31, 1971, Ser. No. 176,628
Int. Cl. B23k 9/02
U.S. Cl. 219—60 A 6 Claims



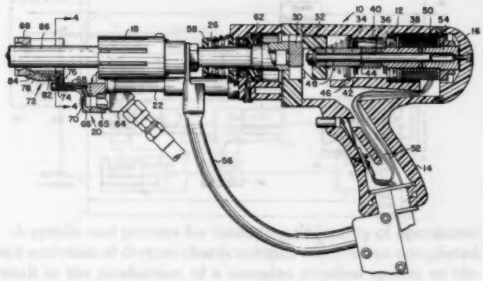
A method and apparatus for welding together a pair of pipe ends. The method comprises providing a water soluble dam at each pipe end, inserting an inert gas into the ends between the dams, welding the ends together and passing a fluid containing water through the pipe to dissolve the dam.

3,736,401

THROUGH DECK WELDING

Thomas E. Shoup, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed July 9, 1970, Ser. No. 53,368
Int. Cl. B23k 9/20
U.S. Cl. 219—98 3 Claims



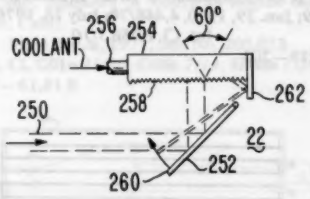
This invention is directed at a drawn-arc welding gun with means for providing a rotary flow of air, or stream of fluid, around the weld area. This invention is also directed at ferrules which are designed to enhance movement of air or fluid around the weld area.

3,736,402

AUTOMATED LASER TOOL

Wayne S. Mefferd, Palo Alto, and Wendall C. Gates, Santa Clara, both of Calif., assignors to Coherent Radiation

Filed Sept. 17, 1970, Ser. No. 73,142
Int. Cl. H01s 3/00; B23k 9/00
U.S. Cl. 219—121 LA 4 Claims



An automated laser tool including a work table upon which a work piece is placed, a stationarily mounted laser, and optical means for directing the output beam from the laser along a controlled path to effectuate a cutting operation on the work piece.

3,736,403

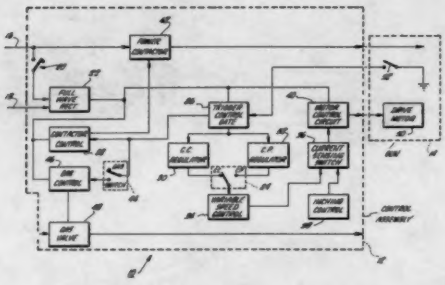
HANDHELD AUTOMATIC WIRE ELECTRODE TRANSPORT UNIT SUPPLIED WITH POWER FROM A SINGLE RECTIFIER UNIT

Laurence B. Rogers, Escondido; Malcolm A. Neumann, El Cajon, and Dwain K. Dolan, San Diego, all of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Jan. 4, 1971, Ser. No. 103,393
Int. Cl. B23k 9/10
U.S. Cl. 219—131 F 8 Claims

A welding gun and control assembly is adapted to connect alternatively to constant potential or constant current power supplies for an arc welding operation. The gun assembly includes an internal drive motor which automatically advances the electrode wire. The control assembly, which requires only a single cable from the main power supply, provides power to

the drive motor and for welding, irrespective of the power supply. In alternative embodiments, the gun and control assemblies can be adapted to operate with a shielding gas, in



which case the cable connecting the gun assembly to the control assembly includes a gas hose. The gun assembly is then provided with a shielding gas cowl to enclose the bell portion of the gun.

3,736,404

COMBINED DEMISTING AND DEFROSTING HEATING PANEL FOR WINDOWS AND OTHER TRANSPARENT AREAS

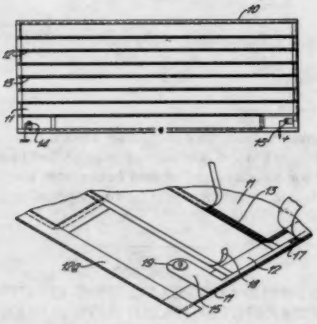
Paul Eisler, 57 Exeter Road, London, England

Filed Dec. 8, 1970, Ser. No. 96,218

Claims priority, application Great Britain, Dec. 18, 1969, 61,684/69; Jan. 29, 1970, 4,448/70; July 18, 1970, 34,971/70

Int. Cl. H05b *3/10*

U.S. Cl. 219—203 **12 Claims**



Heater panel for application of heat to a transparent area, demisting and de-icing of vehicle rear windows. A panel form, adherent to the transparent area, has a transparent base of plastics material onto which there is made adherent a series of spaced parallel electrical solid conductor elements in meander form. The conductor elements are covered with an adhesive for ensuring sticking of them to the transparent area and to assist direct heat conduction to the transparent area. For variable rates of heating selective switching of series or parallel arrangements of the conductor elements is possible.

3,736,405

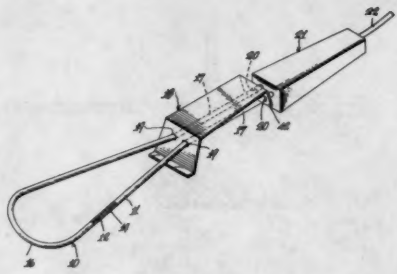
ELECTRIC HEATERS

Charles E. Bryson, Jr., and Gary I. Barton, both of Murfreesboro, Tenn., assignors to Emerson Electric Co., Saint Louis, Mo.

Filed Nov. 24, 1971, Ser. No. 201,753

Int. Cl. F23q *7/22*

U.S. Cl. 219—270 **2 Claims**



A sheathed electric heater, particularly of the charcoal lighter type, having a resistor within the sheath, terminal pins electrically connected to the ends of the resistor, and an insulated power supply cord having a pair of current conductors electrically connected to respective terminal pins, the improvement comprising a handle for the heating element which is formed of electric insulating material and molded around adjoining parts of the sheath and cord and extending unbroken therebetween to completely encapsulate such parts, the terminal pins extending from the sheath and the electrical connection between the terminal pins and the current conductors.

3,736,406

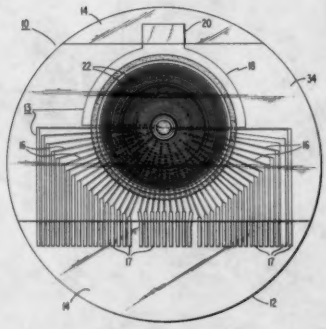
THERMOGRAPHIC PRINT HEAD AND METHOD OF MAKING SAME

John Louis Vossen, Somerville, and John Joseph O'Neill, Belle Meade, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed June 21, 1972, Ser. No. 264,832

Int. Cl. H05b *1/00*

U.S. Cl. 219—216 **9 Claims**



A thermographic print head for encoding labels on thermographic paper is made by a method of depositing, on an electrically insulating substrate, first and third layers of electrically conductive material separated by a second layer of insulating material. The first layer comprises a plurality of separated terminal leads, and the third layer comprises a plurality of

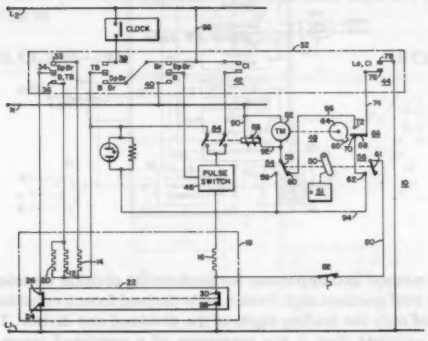
separated concentric ring conductors, each of which is connected to selected terminals of the first layer through vias in the separating second layer of electrically insulating material.

3,736,407

AUTOMATIC RESETTING TIMER

James A. Leach, Shelby, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 7, 1971, Ser. No. 187,433
Int. Cl. H05b 1/02
U.S. Cl. 219—492 4 Claims



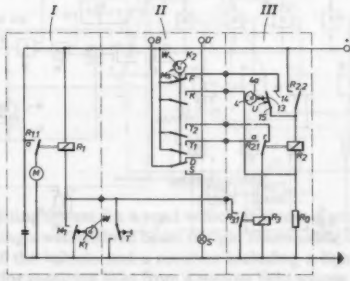
An apparatus for timing the clean cycle of a self-cleaning pyrolytic range, terminating the clean cycle and resetting itself is disclosed. The timing device is actuated by movement of a door latch handle to latch position and is reset after a predetermined time by moving the door latch handle to its unlatched position. No undesired mechanical linkage is required that extends between the front and rear of the self-cleaning range when utilization of the circuitry disclosed is had.

3,736,408

TAXI METER WITH AUTOMATIC RATE ADJUSTMENT

Herbert Kienzle, Villingen, Germany; Walter Dellheim, Long Island City, N.Y., and Heinz Kelch, Buchenberg, Germany, assignors to Kienzle Apparate GmbH, Villingen, Germany

Filed July 23, 1971, Ser. No. 165,854
Claims priority, application Germany, July 25, 1970, P 20 37 048.3
Int. Cl. G07b 13/10
U.S. Cl. 235—30 9 Claims



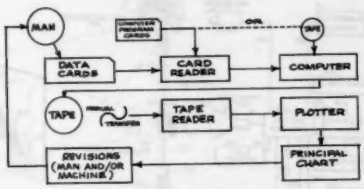
A known taxi meter computes fares at a first rate at the start on each ride and at a second rate upon completion of a predetermined time or mileage. Interconnected with this automatically shifting taxi meter is a time switch which causes the taxi meter to advance to the second rate immediately upon activation at determined times of the day or during holidays.

3,736,409

MANAGEMENT SYSTEM AND METHOD

Edwin A. Boyan, Riverside, Calif., assignor to Program Control Corporation, Van Nuys, Calif.

Continuation of Ser. No. 652,969, July 12, 1967, abandoned. This application Jan. 11, 1971, Ser. No. 105,658
Int. Cl. G05b 15/00; G06f 15/00; G06k 15/00
U.S. Cl. 235—61.6 R 1 Claim



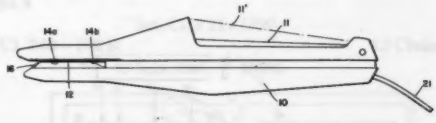
A system and process for managing a plurality of operations and activities of diverse characteristics which when completed result in the production of a complex physical system or object. The managing process comprises step procedures and activities, including man-machine procedures, which step procedures may in instances be independent and in others interdependent and may be in part at least partially concurrent in time. The system effectively optimizes the time-relationships and completions of the activities and correlated operations to bring the production of the physical system or object to a conclusion with optimum utilization of time at minimum expense, while during the production period admitting of changes in activites both as to content, operatives involved and time used and timing.

3,736,410

HAND HELD APPARATUS FOR SENSING DATA BITS CARRIED ON A SHEET

Evan L. Ragland, Atherton, and Robert D. Carlson, Danville, both of Calif., assignors to American Regitel Corporation, San Carlos, Calif.

Filed Dec. 6, 1971, Ser. No. 205,073
Int. Cl. G01n 21/30; G06k 7/14; H04m 1/26
U.S. Cl. 235—61.11 E 9 Claims



A compact, hand held punch-hole-code ticket reader includes a matrix of light emitting diodes lying in a plane with a substantially planar large area photo-voltaic detector of unitary construction juxtaposed, parallel and coextensive with the light emitting diodes. A ticket is inserted between the diodes and detector. The diodes are scanned or sequentially activated and the detector provides a serial data output.

3,736,411

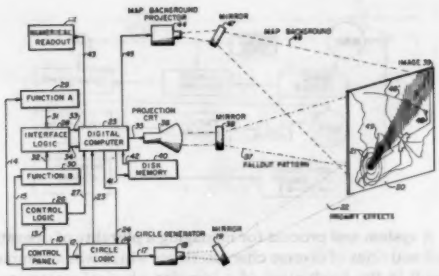
GRAPHICS DISPLAY SYSTEM

Carl W. Berndt, Danville, Calif., assignor to The United States of America as represented by the Atomic Energy Commission, Washington, D.C.

Continuation-in-part of Ser. No. 816,349, April 15, 1969, abandoned. This application May 17, 1971, Ser. No. 144,035
Int. Cl. G03b 29/00
U.S. Cl. 235—151 7 Claims

A system for computing and displaying prompt and delayed effects of nuclear explosions with respect to a geographical

area. The display is based on various input parameters concerning the initial conditions under which an explosive is detonated. The display is a superposition of prompt effects, viz., blast, thermal effects, etc., represented by concentric circles; fallout, represented by a time varying growing and variegated mosaic pattern; and a map whose scale is controllable upon command, this being accomplished by three separate images simultaneously projected on a screen from three separate sources. A computer controls the display and makes changes on it, utilizing relationships which characterize nuclear effects as functions of time. The apparatus is useful for understanding, analyzing, demonstrating and predicting the effects of nuclear weapons.

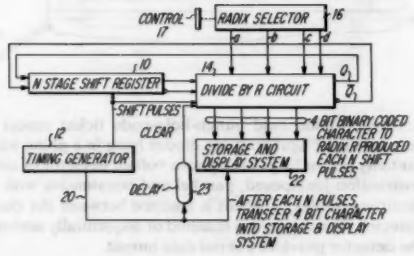


3,736,412

CONVERSION OF BASE B NUMBER TO BASE R NUMBER, WHERE R IS A VARIABLE

Carl Macey Wright, Cinnaminson, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 17, 1971, Ser. No. 143,863
Int. Cl. H04l 3/00
U.S. Cl. 235—155 1 Claim


CONTROL 17
RADIX SELECTOR 16
N STAGE SHIFT REGISTER
DIVIDE BY R CIRCUIT
SHIFT PULSES
CLEAR
TIMING GENERATOR
DELAY
STORAGE AND DISPLAY SYSTEM
4 BIT BINARY CODED CHARACTER TO RADIX R PRODUCED EACH N SHIFT PULSES
AFTER EACH N PULSES, TRANSFER 4 BIT CHARACTER INTO STORAGE & DISPLAY SYSTEM

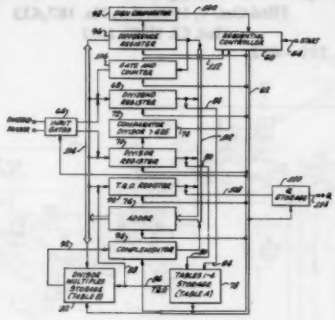
A binary number stored in an N stage register is shifted a bit at a time, most significant bit first, into a serial divider. The divider is adjustable in the sense that it may be set to divide by any number R, where R is the radix of the number system into which the binary number is to be converted. The divider produces a quotient bit in response to each bit it receives and produces a multiple bit, binary-coded character to the new base after each N shift pulses. The quotient bits are shifted back into the least significant bit position of the register as they are produced.

3,736,413

PRE-CONDITIONED DIVISOR TRIAL QUOTIENT DIVIDER

David E. Ferguson, Santa Monica, Calif., assignor to Programmatics, Inc., Los Angeles, Calif.

Filed Mar. 15, 1971, Ser. No. 123,968
Int. Cl. G06f 7/52
U.S. Cl. 235—156 6 Claims



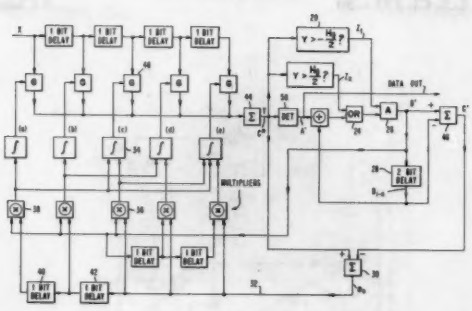
A method and apparatus for performing division by selecting a trial quotient digit from a table derived from a consideration of only the leading digits of the dividend and divisor. The trial quotient digit is the maximum of a restricted range of possible quotient digits and is used to select a corresponding multiple of the divisor which is then tested by subtraction from the dividend. The trial quotient digit is subsequently adjusted if necessary. A basic apparatus and a computer program is also described to illustrate the implementation of the method by means of a digital computer. A table look-up procedure for obtaining the multiples of the divisor may also be used in a method of multiplication.

3,736,414

TRANSVERSAL FILTER EQUALIZER FOR PARTIAL RESPONSE CHANNELS

Gerald K. McAuliffe, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,464
Int. Cl. H04b 3/14; G06g 7/19
U.S. Cl. 235—181 10 Claims



The present invention relates to a fast converging transversal filter equalizer for partial response channels including a multi-tap delay line. In the preferred embodiment the equalizer multiplies an error signal and a recreated signal as received by the equalizer. The multiplier outputs in turn feed integrators whose outputs represent correlation functions which control the gain from a series of delay line tap outputs,

the summation of the tap outputs comprising the output of the equalizer. In a further embodiment of the invention, the error signal is correlated with the tap outputs themselves and the outputs of the correlators control the tap outputs from the delay line to produce the final output signal in a different configuration.

3,736,415

ELECTRIC ANALOGUE CALCULATING CIRCUITS

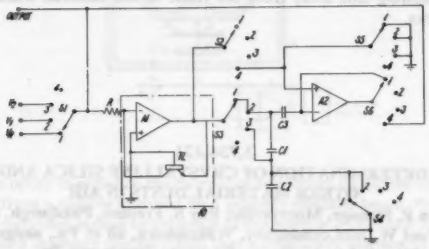
John Malcolm Morrison, Edinburgh, Scotland, assignor to Ferranti Limited, Hollinwood, England

Filed Sept. 14, 1971, Ser. No. 180,308

Claims priority, application Great Britain, Sept. 19, 1970, 44726/70

Int. Cl. G06g 7/24

U.S. Cl. 235—193 **5 Claims**



An electric analog calculating circuit uses a single logarithmic stage for all steps of a calculation. Each input quantity is applied to the stage and the resulting output stored in a signal storage device. The stored quantities are then combined in the required manner and the logarithmic stage is used in the negative feedback path of a comparator to provide the required output quantity.

3,736,416

LIGHTING SYSTEMS FOR ROAD VEHICLES

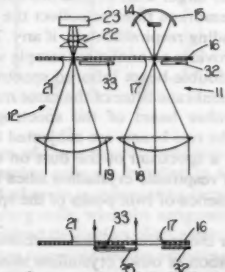
Alan Goodwin, 520 Hob Moor Road, Birmingham, England

Filed Nov. 11, 1971, Ser. No. 197,864

Claims priority, application Great Britain, Nov. 14, 1970, 54,307/70

Int. Cl. F21v 11/18

U.S. Cl. 240—46.21 **6 Claims**



A lighting system for a road vehicle includes a projector for producing a well defined beam of light illuminating the road in front of the vehicle and a receiver including a light sensitive device for receiving light from a remote light source in front of the vehicle in use. The system includes a shutter movable in response to light received by the receiver, to cut off a sufficient amount of the projected beam to ensure that the projected beam does not fall on the remote light source, and the system includes a light directing arrangement for directing light from the projector into the receiver in the operative condition of the system where there is no remote light source in the field of view of the receiver.

3,736,417

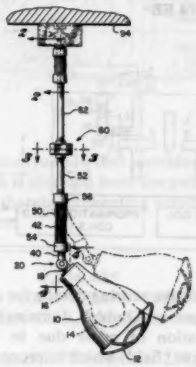
LIGHTING FIXTURE

Charles S. Williams, 4013-49th St., Lubbock, Tex.

Continuation-in-part of Ser. No. 846,000, July 30, 1969, abandoned. This application July 27, 1970, Ser. No. 58,622

Int. Cl. F21s 1/00

U.S. Cl. 240—78 R **22 Claims**



A light support portion is interconnected preferably through an adjustable joint to a lower spring means. The lower spring means is interconnected with an upper spring means by an intermediate relatively rigid means preferably a swivel joint connected at an intermediate point thereof. The upper spring means is attached to a support means. The upper spring means is shorter and more rigid than the lower spring means whereby the upper spring means mainly serves to absorb horizontal forces while the lower spring means absorbs both horizontal and vertical forces.

3,736,418

SHADE FOR A LIGHT

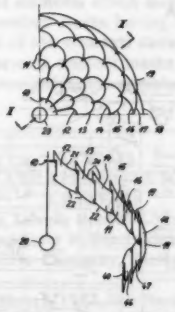
Milada Havlova, nee Stribrny, 114 Munich, Germany, assignor to Messrs. Vest Ges. m.b.H., Vienna, Australia

Filed Dec. 10, 1970, Ser. No. 96,842

Claims priority, application Germany, Dec. 13, 1969, P 19 62 694.9

Int. Cl. F21v 1/00

U.S. Cl. 240—108 R **13 Claims**

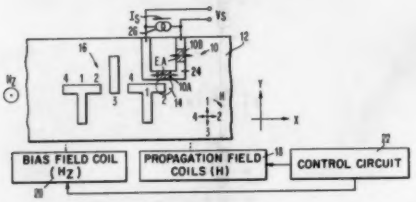


Shade for a light consisting of laminar elements which are individually bent and arranged in a plurality of parallel rows. Each element is provided with hook-like projections at both opposite lateral edges and recesses displaced in relation to the hook-like projections. Each of the plurality of adjacent rows consisting of the elements is offset to a preceding row thus forming a three-dimensional shade body.

3,736,419
MAGNETORESISTIVE SENSING OF BUBBLE DOMAINS WITH NOISE SUPPRESSION

George S. Almasi, Purdy Station, and George E. Keefe, Montrose, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,547
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 EB 24 Claims

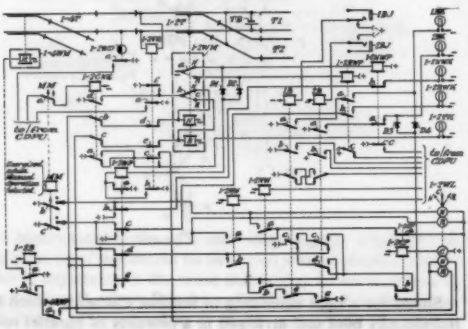


A magnetoresistive sensing device for detection of cylindrical magnetic domains (bubble domains) in magnetic bubble sheets. Cancellation of noise due to fields (such as the propagation (drive) field) which intercept the sensing element is achieved by using two magnetoresistive sensing elements whose combined voltage (or current) output is constant in the absence of a bubble domain. In one sensing element, the measuring current through the element is substantially parallel to the magnetization direction of that element, while in the second element, the measuring current is substantially perpendicular to the magnetization direction of the second element. In a preferred embodiment, two sensing elements are electrically connected in series and the sum of their resistances is constant when the device is being operated, in the absence of domains. When a domain is present, the sum of the resistances is different, so the output of the device changes. Each sensor can be associated with a different information channel (or group of channels) in which domains are propagated.

3,736,420
SWITCH CONTROL ARRANGEMENT FOR RAILROAD CLASSIFICATION YARDS

J. Calvin Elder, and William B. Dufer, both of Penn Hills Township, Allegheny County, Pa., assignors to Westinghouse Air brake Company, Swissvale, Pa.

Filed Sept. 13, 1971, Ser. No. 179,728
Int. Cl. B61l *19/14*
U.S. Cl. 246—182 AA 12 Claims

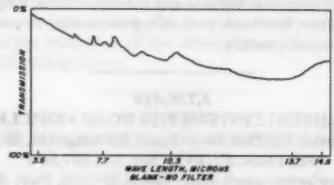


The central data processor controlling the automatic switching system also compares the initial axle count, registered when a car enters the yard, with the axle count for that car from a wheel detector in the approach to each switch along the selected route. As long as the compared counts are not equal, the data processor holds energized an added detector relay. Back contacts of this relay interrupt the switch control circuit network to inhibit switch operation to the position selected for the next car, in the same manner as switch detector track circuit relay contacts are used. Thus the switch is locked against movement, not only when the associated track circuit is occupied but by lack of comparison between the axle counts if the track circuit is spanned, and full operating safety is maintained even with long cars. Blocking jacks for each storage track are provided in the track diagram on the yard control console. Insertion of a plug into a jack, to block further entry of cars in that track, activates a circuit network which bypasses and thus inhibits control of the key switch for that track by the data processor. Rather the key switch is positioned and held, overriding all other controls, to route all approaching cars away from the route to the blocked track or tracks.

3,736,421
DETERMINATION OF CRYSTALLINE SILICA AND OTHER MATERIAL DUSTS IN AIR

John P. Strange, Murrysville; Ray S. Frellino, Pittsburgh, and Paul W. McConnaughey, Wilkinsburg, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed July 27, 1971, Ser. No. 166,494
Int. Cl. G01n *21/16, 31/00, 33/28*
U.S. Cl. 250—43.5 R 6 Claims



According to the invention crystalline silica in the form of particles finer than 10 microns (respirable dust) in air, such as mine atmospheres, is determined by removing from the air particulate matter larger than 10 microns and then passing the air through a membrane filter to collect the residual particulate matter including respirable dust, if any. The filter with its adherent dust provides an analytical sample which is placed in one beam of a double-beam infrared spectrophotometer; an unused, clean membrane filter of the same material and size is placed in the other beam of the spectrophotometer as a reference, and the two beams are subjected to infrared radiation to produce a spectrum of the dust on the sample filter. The presence of respirable crystalline silica is shown qualitatively by the presence of twin peaks of the spectrum at 12.52, 12.82 microns.

In like manner the method of this invention may be applied to the determination of other crystalline minerals in the form of particles finer than the wave length of the infrared radiation, including other dusts hazardous to the health of workmen, including mixtures of such other crystalline minerals with one another or with silica. In most cases such other crystalline minerals will be finer than 20 microns although in some instances they may be finer than about 35 microns.

The various crystalline minerals possess, like crystalline silica, characteristic absorption peaks, which may be used to identify the minerals of a given sample, just as in the case of crystalline silica, and in general these identifying peaks have been reported in the literature of infrared mineral spectroscopy.

3,736,422

APPARATUS FOR IMPROVING THE SIGNAL INFORMATION IN THE ELECTRON BEAM EXAMINATION OF SAMPLE TOPOGRAPHY

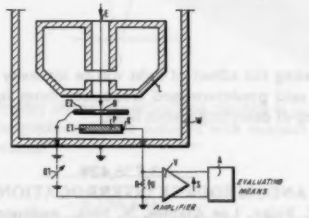
Ulrich Weber, 7500 Karlsruhe 21, and Jurgen Gullasch, 6741 Minderslachen, both of Germany, assignors to Siemens Aktiengellschaft, Munich, Germany

Filed Feb. 8, 1971, Ser. No. 112,919

Claims priority, application Germany, Feb. 7, 1970, P 20 05 682.0

Int. Cl. G01n *23/22*

U.S. Cl. 250—49.5 PE 13 Claims



In order to enhance the current of secondary electrons flowing from a sample scanned by a primary electron beam, there are provided means to generate at the sample an electric field of such intensity and direction that a substantial portion of the secondary electrons emitted by the primary electron bombardment is drawn away from the sample surface. The electric field may be periodically varied. The sample current is applied to an image forming apparatus correlated to the scanning motion of the primary electron beam.

3,736,423

ELECTRON LENS OF MAGNETIC FIELD TYPE FOR AN ELECTRON MICROSCOPE AND THE LIKE

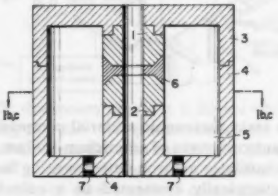
Shinjiro Katagiri, and Syozo Kasai, both of Hachioji, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 12, 1971, Ser. No. 142,606

Claims priority, application Japan, May 13, 1970, 45/40630

Int. Cl. H01j *37/10*

U.S. Cl. 250—49.5 D 12 Claims



An electron lens of the magnetic field type, wherein a plurality of compensating coils are installed in a magnetic cover for a lens coil and wherein compensating currents are supplied to said compensating coils, whereby astigmatism appearing in the lens and undesired deflection of an electron beam passing through the lens are compensated by adjusting said currents.

3,736,424

CORONA DISCHARGE DEVICE

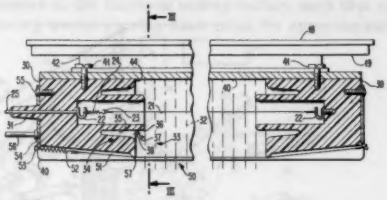
Thomas F. Cecil, II, and Ronald V. Davidge, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1971, Ser. No. 204,464

Int. Cl. H01j *37/00*

U.S. Cl. 250—49.5 ZC 12 Claims

The continued performance of a charge corona for an electrostatic copy machine is enhanced by the provision of specially configured corona wire support blocks that minimize current leakage through hygroscopic salts accumulating on the support block surface. The support blocks are configured



to include a surface interruption that provides a cul-de-sac including surface which is shielded from the path of corona current and ionized gas thereby preventing accumulation of salts on the shielded portion.

3,736,425

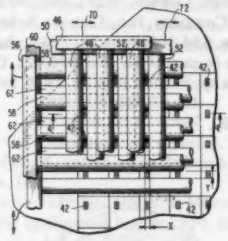
SCREEN FOR ION IMPLANTATION

Fred Chernow, Boulder, Colo., assignor to Implama A.G. Z U G, Switzerland

Filed Mar. 27, 1972, Ser. No. 238,400

Int. Cl. H01j *37/00*; G01n *23/00*

U.S. Cl. 250—49.5 T 6 Claims



Ion implantation doping of a semiconductor wafer to form multiple integrated circuits is carried out by placing a variable opening mask between a large ion beam and the semiconductor wafer. The mask has a plurality of identical openings, one for each IC to be created, which may be varied in size by shifting the positions of elements which make up the mask. The elements are themselves masks having fixed openings. The relative movement of the elements causes a variation of the alignment of the several element masks to thereby vary the overall openings provided by the combination of the element masks.

3,736,426

METHODS OF AND APPARATUS FOR INSPECTING CRYSTALS

Albin R. Anderson, Lowell; Robert P. Grenier, Newburyport, both of Mass., and Peter R. Perri, Atkinson, N.H., assignors to Western Electric Company, Incorporated, New York, N.Y.

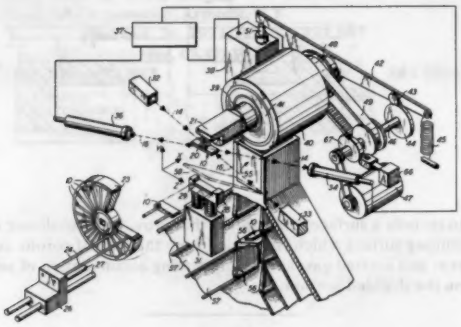
Filed Mar. 1, 1972, Ser. No. 230,673

Int. Cl. G01n *23/20*; H01j *37/20*

U.S. Cl. 250—51.5 7 Claims

In order to determine the angular orientation of atomic planes in a crystal relative to a reference surface thereof, the crystal is inspected by an X-ray defraction technique in which a pair of X-ray beams are sequentially passed through the crystal from opposite directions while the crystal is rotated through a small arc and monitored for Bragg angle reflections. The two angles at which reflections occur are then averaged to

determine an average Bragg angle of reflection. This technique compensates for the situation in which the atomic



planes of the crystal are completely oblique to the reference surface by cancelling component vectors of reflection introduced by the complete obliqueness.

3,736,427

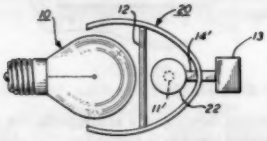
SHORT WAVELENGTH FLUORESCENT LIGHT SOURCE

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Inc., Lincoln, Nebr.

Division of Ser. No. 654,303, June 26, 1967, abandoned, which is a continuation-in-part of Ser. No. 590,071, Oct. 27, 1966, abandoned. This application July 24, 1970, Ser. No. 64,856

Int. Cl. G01n *21/38*

U.S. Cl. 250—71 R . 12 Claims



Devices providing 270–320 μ and preferably 280 μ fluorescent light are described in which a primary source of shorter wavelength light is incident upon an elongated thallium-activated alkali halide fluorescent crystal having rounded ends serving as lenses to collimate fluorescent light emanating from said ends. Methods and means are also described for prolonging the useful life of the fluorescent crystal, including optical means for filtering out the deleterious wavelengths of the light from the primary source, means for dissipating heat from the crystal to reduce its degrading effect, and a method and means for cleaning and maintaining the crystals free of surface contamination adversely affecting its fluorescent properties.

3,736,428

DETECTING WITH ULTRAVIOLET LIGHT

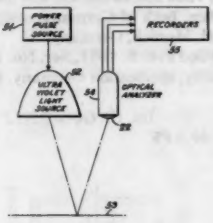
John N. Monroe, Waco, Tex., assignor to Thompson Ramo Wooldridge Inc., Euclid, Ohio

Continuation-in-part of Ser. No. 628,824, Dec. 17, 1956, abandoned. This application Mar. 27, 1958, Ser. No. 724,473

Int. Cl. G01n *21/00*

U.S. Cl. 250—71 G 6 Claims

1. A method of detection in the presence of ambient light comprising the steps of beaming a source of ultraviolet light pulsed at a predetermined frequency upon a surface under scrutiny from an aircraft, scanning the beam of ultraviolet light in a direction perpendicular to the travel of said aircraft, detecting visible light emanating from said surface, and



eliminating the effect of light whose intensity varies at a rate below said predetermined frequency from light detected in said step of detecting visible light.

3,736,429

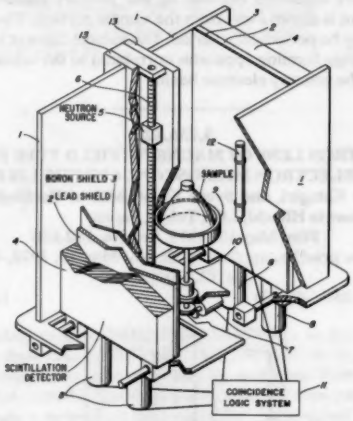
RANDOM SOURCE INTERROGATION SYSTEM

John E. Foley, Los Alamos, N. Mex., assignor to The United States of America as represented by The United States Atomic Energy Commission

Filed June 28, 1972, Ser. No. 266,961

Int. Cl. G01j *39/18*

U.S. Cl. 250—71.5 R 6 Claims



A system to assay fissionable material comprising a sample container, a neutron source of americium-lithium, lead shielding, a plastic scintillator neutron detector using fast photomultiplier tubes electrically connected to a coincidence logic system, and rotating the sample by any well known means along with varying the position of the said neutron source.

3,736,430

POSITION INDICATING SYSTEM AND METHOD THEREFOR

Rimvydas Kaminskas, 312 Camino de Las Calina, Redono Beach, Calif., granted to United States Atomic Energy Commission under the provisions of 42 U.S.C. 2182

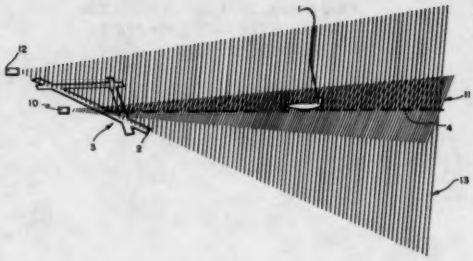
Filed Oct. 23, 1969, Ser. No. 868,704

Int. Cl. G01t *1/16*

U.S. Cl. 250—83.3 R 25 Claims

An aircraft landing system based upon two or more beams of nuclear radiation. Each beam is shaped to conform to a desired pattern and is frequency modulated for identification and comparison purposes. Overlapping of two beams provides a spatial plane to serve as one reference such as a glide slope. A second pair of overlapping beams aligned substantially per-

pendicular to the first reference provides a second spatial plane to serve as a second reference such as a localizer beam.



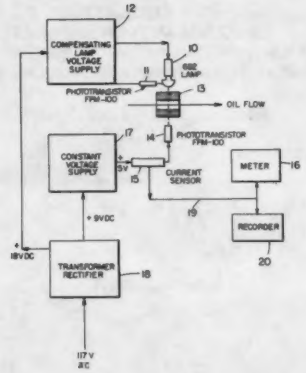
Appropriate circuitry aboard approaching aircraft is provided to determine the position of the aircraft with respect to the two reference beams.

3,736,431

SYSTEM FOR MONITORING A FLUID STREAM

Elbert B. Childs, Hastings-on-Hudson, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 30, 1971, Ser. No. 139,121
Int. Cl. G01n *21/26*; G08b *21/00*; G01j *1/32*
U.S. Cl. 250—205 **7 Claims**



The specific disclosure provides a device which includes a circuit having a pair of phototransistors. One of the phototransistors senses the amount of light transmission from a light source through an oil chamber. The other phototransistor is in direct optical communication with the light source, and generates a signal in response to ambient temperature which is used as a basis for adjusting the intensity of light emitted by the light source. A diminution of light transmission through the chamber is indicative of a degradation of the oil therein.

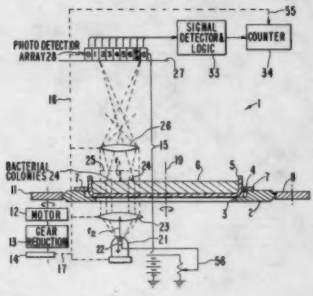
3,736,432

BACTERIAL COLONY COUNTING METHOD AND APPARATUS

Richard G. Sweet, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Mar. 22, 1971, Ser. No. 126,778
Int. Cl. G06k *7/00*
U.S. Cl. 250—222 PC **7 Claims**

Light from a localized source is projected through a transparent bacterial culture medium having a multitude of bacterial colonies formed on the surface thereof. The bacterial colonies serve as lenses for focusing images of the light source into a pattern of images which are projected into an image plane forming a pattern of light images corresponding to the pattern of bacterial colonies. A linear array of photodetectors is disposed in the projected image plane. The optical system is scanned relative to the bacterial colony culture such that adjacent scanning tracks overlap each other by approximately



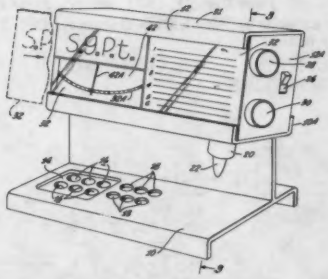
the track width of two photodetectors of the array of photodetectors. An output pulse, which is to be counted, from one detector inhibits counting output pulses from its nearest neighbors and the output pulses from the detectors at opposite ends of the array are not counted to form guard detectors, whereby colonies are accurately counted and colonies which overlap adjacent scanning tracks are counted but only once.

3,736,433

DIAGNOSTIC UNIT

Forrest Wm. Davis, Altadena, and Lamont J. Seltz, Huntington Beach, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation of Ser. No. 809,318, March 21, 1969, abandoned. This application July 6, 1971, Ser. No. 160,044
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 R **1 Claim**



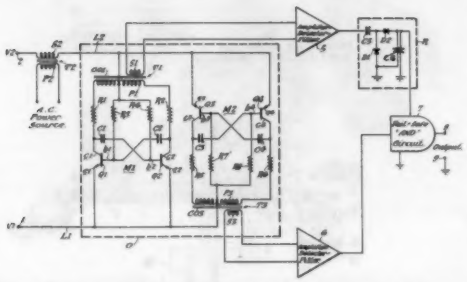
An improved probe photometer type of diagnostic unit is provided which includes a light source, a probe having light transmitting means for conducting light from the source and a photocell light receiving means spaced therefrom, an electronic amplifying circuit electrically connected to the output of the photocell and an electric meter connected to the output of the amplifying circuit, and a transparent removable slide member which is inserted into the unit for a particular test, providing a scale for the meter so that it may indicate direct readings corresponding to the particular test being conducted.

3,736,434

FAIL-SAFE ELECTRONIC COMPARATOR CIRCUIT

John O. G. Darrow, Murrysville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed June 7, 1971, Ser. No. 150,550
Int. Cl. H03k 5/20
U.S. Cl. 307—235 R 17 Claims



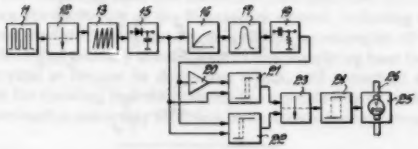
This disclosure relates to a fail-safe comparator circuit having a pair of free-running multivibrators powered by two separate d.c. supply voltages. An a.c. modulating signal is coupled to the multivibrators for alternately pulsing the multivibrators into conduction. An amplifier-detector-filter circuit is coupled to each of the multivibrators for amplifying and demodulating the signals produced by the multivibrators. A rectifier network is coupled to one of the amplifier-detector-filter circuits for producing a d.c. voltage. The d.c. voltage and the demodulated signals of the other amplifier-detector-filter circuit are coupled to a fail-safe "AND" gate so that a periodic output signal is passed by when and only when the two d.c. supply voltages are in agreement and no critical component or circuit failure is present.

3,736,435

ARRANGEMENT FOR PREVENTING THE LOCKING OF WHEELS OF MOTOR VEHICLES

Detlev Runge, Gerlingen, and Werner Gotz, Monsheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 21, 1971, Ser. No. 210,400
Claims priority, application Germany, Dec. 28, 1970, P 20 64 067.9
Int. Cl. B60t 8/10
U.S. Cl. 307—10 R 27 Claims



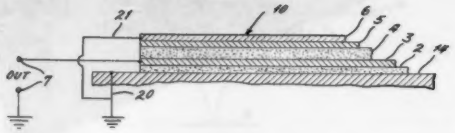
A D.C. voltage of amplitude inversely proportional to vehicle speed is directly applied to the second inputs of a first and second comparator stage. The D.C. voltage is also applied to a logarithmic circuit and then differentiated. The output of the differentiator is applied to the first input of the second comparator stage and further, through an inverter, to the first input of the first comparator stage. The outputs of the comparator stages control, through a switching amplifier, the operation of an electrically operated pressure decreasing brake valve.

3,736,436

ELECTRET PRESSURE TRANSDUCER

Roger C. Crites, Florissant, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Nov. 4, 1971, Ser. No. 195,750
Int. Cl. H01g 7/02; H04r 19/00
U.S. Cl. 307—88 ET 7 Claims



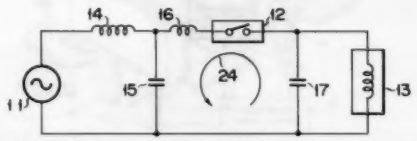
An electret pressure transducer consisting of a very thin insulating coating applied to the surface of a body to be investigated when under stress, a thin layer of conductive paint or metallic deposit configured to extend over the area to be investigated, a layer of a solid elastic material, the electret-film containing a permanent electric charge, and a metallic deposit on the electret film. The layer of conductive paint and the metallic deposit constitute the two plates of a parallel-plate capacitor, and the elastic material in conjunction with the electric charge provided by the electret determines the sensitivity, linearity, and frequency response of the transducer.

3,736,437

VACUUM SWITCH APPARATUS

Akira Nabae, and Mikio Okawa, both of Tokyo, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Jan. 12, 1971, Ser. No. 105,933
Int. Cl. H01f 27/42
U.S. Cl. 307—93 7 Claims



A vacuum switch apparatus comprising a vacuum switch having a pair of electrodes, and a series circuit consisting of a resistor and capacitor disposed between one of said electrodes and ground to suppress the oscillation of abnormal voltage generated at the opening of said switch. The resistor preferably has a value of 100 ohms and the capacitor preferably has a value of 0.1 μF.

3,736,438

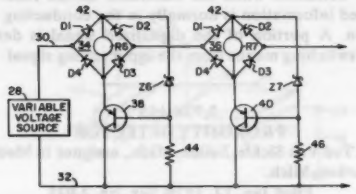
APPARATUS FOR SEQUENTIALLY ENERGIZING ELECTRICAL UTILIZATION DEVICES

Thomas C. Matty, and Robert H. Perry, both of East Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 29, 1971, Ser. No. 167,139
Int. Cl. H01h 47/00
U.S. Cl. 307—130 3 Claims

Apparatus for energizing in sequence each of a plurality of electrical utilization devices, such as relays, with the use of

reverse voltage breakdown elements. The invention finds particular, but by no means exclusive, utility in the control of



vehicles in a train of vehicles, each of which is driven by its own separate drive motor means (e.g., a subway train).

3,736,439

CURRENT-LIMITING SWITCH EMPLOYING LOW TEMPERATURE RESISTOR

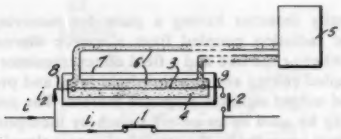
Fritz Kesselring, Kusnacht, Switzerland, assignor to Siemens Aktiengesellschaft, Berlin and Munchen, Germany

Division of Ser. No. 39,040, May 20, 1970, Pat. No. 3,617,807. This application July 22, 1971, Ser. No. 165,310

Claims priority, application Germany, May 23, 1969, P 19 26 972.8

Int. Cl. H02h *7/22*

U.S. Cl. 307—135 **3 Claims**



A circuit interrupter is provided with a parallel-connected resistor which is cooled to a temperature of from 4° K to 80° K, but higher than the critical temperature of the resistance material. The resistor is connected in parallel with the circuit interrupter contacts at either an arbitrary time or just prior to a current zero value. The heating of the resistor during current-limiting operation increases its resistivity by about 100 times.

3,736,440

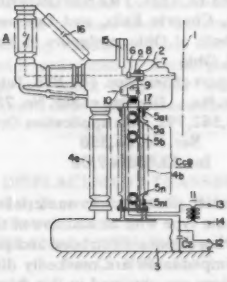
CIRCUIT BREAKER

Yoshio Nitta; Nobuaki Kiyokuni, and Kikuo Kawasaki, all of Kawasaki, Japan, assignors to Fuji Denki Seizo Kabushiki Kaisha, Kanagawaken, Japan

Filed Oct. 8, 1971, Ser. No. 187,783

Int. Cl. H01h *3/26*

U.S. Cl. 307—140 **8 Claims**



Disclosed herein is a circuit breaker comprising as its constructive elements, an insulation transformer adapted to supply an electric power from the ground potential portion to a control device placed on a high potential portion, or a current transformer connected to a line potential portion, a stray capacity of the insulation transformer or current transformer being skillfully utilized whereby measurement or observation of a system voltage can be readily achieved without use of a separate capacitor type potential divider for measuring a voltage between contacts of the circuit breaker.

3,736,441

GALVANO-MAGNETRO EFFECT APPARATUS

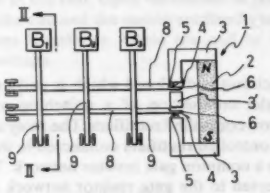
Noburu Masuda, Kawaguchi, and Masai Kuroyanagi, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed May 10, 1972, Ser. No. 252,090

Claims priority, application Japan, May 12, 1971, 31760/71

Int. Cl. H02j *3/00*

U.S. Cl. 307—149 **12 Claims**



A galvano-magnetro effect apparatus, wherein a plural number of gaps are formed in a direction at a right angle to the direction of a magnetic flux flowing in a looped magnetic path, galvano-magnetro effect devices are fixedly provided in said gaps, magnetic pieces which move in a direction at a right angle to the direction of the magnetic flux are provided in said gaps and said galvano-magnetro effect devices are selectively operated by actuating said magnetic pieces with a selecting means.

3,736,442

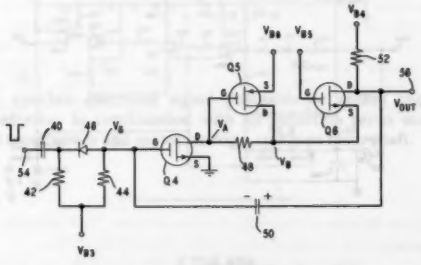
REGENERATIVE SWEEP CIRCUITS USING FIELD EFFECT TRANSISTORS

Steven Gary Miller, Highlands, N.J., and Leonard Strauss, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Strauss

Filed June 16, 1971, Ser. No. 153,735

Int. Cl. H03k *4/08*

U.S. Cl. 307—228 **22 Claims**



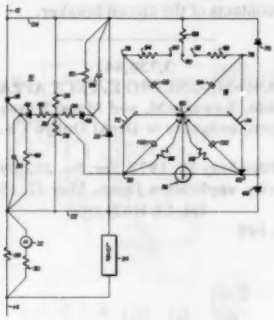
Regenerative sweep circuits for developing a Miller sweep output voltage are disclosed. Three circuits are utilized, each employing three connected field effect transistors which interact in response to a trigger pulse to switch the circuit from a steady state into a Miller sweep region and then, after a preselected period of time, to switch the circuit automatically back to its steady state.

3,736,443

TRIGGER CIRCUIT

Lewis G. Striggow, 1115 Marion Drive, Holly, Mich.

Filed May 16, 1968, Ser. No. 729,704
Int. Cl. H03k 17/00
U.S. Cl. 307—252 2 Claims



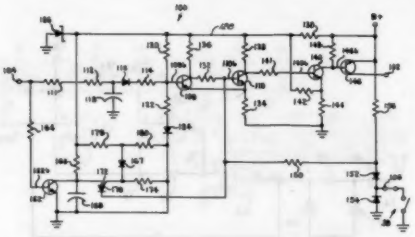
A trigger circuit is disclosed which is particularly useful in controlling the conduction of a switching or relay circuit utilizing silicon controlled rectifiers. The relay circuit includes two silicon controlled rectifiers connected in inverted parallel relation with a common gate resistor network. The trigger circuit is connected to the gate resistor network and includes a silicon unilateral switch and a control network. When the silicon unilateral switch is conducting, the relay circuit is turned off, and when the silicon unilateral switch is non-conducting, the relay circuit is turned on. The control network of the trigger circuit can be connected to provide several functions such as sensitivity control, momentary-on and momentary-off control, locking of the on and off conditions and touch control.

3,736,444

A CIRCUIT FOR CONTROLLABLY DRIVING A SCHMITT TRIGGER IN RESPONSE TO PRESELECTED VARIATIONS IN AN ANALOG INPUT SIGNAL AND IN A DIGITALIZED INPUT SIGNAL

David G. Luchaco, Horseheads, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 183,907, Sept. 27, 1971. This application Oct. 29, 1971, Ser. No. 193,824
Int. Cl. H03k 3/26
U.S. Cl. 307—290 5 Claims



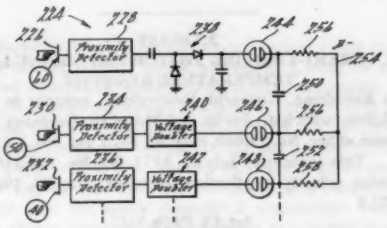
A circuit is disclosed for controllably driving a Schmitt trigger in response to variations in both an analog and a digitalized input signal. A Schmitt trigger normally comprises a pair of electronic devices, each of the devices having a control electrode. The circuit of the present invention applies the analog signal to one of the control electrodes and applies the digitalized signal to the other of the control electrodes. The control electrodes of the Schmitt trigger are biased by voltage divider means so that the electronic device whose electrode is receiving the analog signal is normally in the nonconducting or "off" condition while the electronic device receiving the digitalized information is normally in the conducting or "on" condition. A portion of the digitalized signal is derived by suitable switching means from the input analog signal.

3,736,445

PROXIMITY DETECTOR

Truman Ted Van Sickle, Saline, Mich., assignor to Medar, Inc., Ann Arbor, Mich.

Filed Jan. 12, 1970, Ser. No. 2,021
Int. Cl. H03k 17/00
U.S. Cl. 307—308 2 Claims



A proximity detector having a plate for receiving electromagnetic radiation coupled from a source thereof by a human member or the like and a field effect transistor for detecting coupled energy above a threshold level and providing an amplified output signal in response thereto. The proximity detector may be used as an on-off switch by incorporating a bistable circuit operated by the amplified output signal, and an electronic switch responsive to the two stable states of the bistable circuit.

A dimmer control having a proximity detector as described above in combination with an operational amplifier for yielding an output signal representative of the time that electromagnetic energy above a threshold level is coupled to the receiving plate, and a control circuit for adjusting its output power level in accordance with the level of the output signal from the operational amplifier.

A circuit for selecting one of a plurality of parameters and automatically cancelling all previous selections having a proximity detector as described above for each parameter in combination with a glow discharge tube receiving the output of the respective proximity detectors. The glow discharge tubes are coupled at their output by capacitors so that the energization of one automatically deenergizes the other glow discharge tubes.

3,736,446

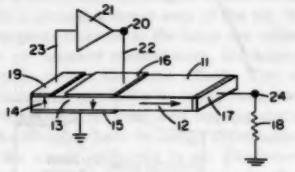
PIEZOELECTRIC TRANSFORMER

Don A. Berlincourt, Chagrin Falls, and Lawrence S. Sliker, Shaker Heights, both of Ohio, assignors to Vernitron Corporation, Bedford, Ohio

Continuation-in-part of Ser. Nos. 651,875, July 7, 1967, abandoned, and Ser. No. , , Division of Ser. No. 734,416, June 4, 1968, Pat. No. 3,562,792. This application Oct. 27, 1970, Ser. No. 84,350
Int. Cl. H01v 7/00
U.S. Cl. 310—8 2 Claims

A body of ceramic piezoelectric material of the lead titanate, lead zirconate type with an additive of the iron oxide type is provided having regions electroded and polarized such that the electrical impedances are markedly different. High voltage transformations are obtained in this manner between input and output electrodes. A third set of electrodes coupled to one of the other sets of electrodes enables the transformer

to accomplish self-oscillation. In order to enable the body to be supported at more than one vibration node, the body is caused to vibrate at a harmonic of its fundamental frequency



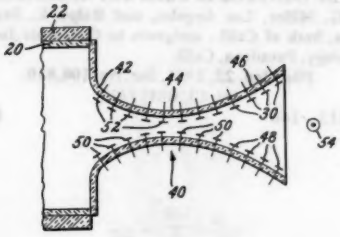
of vibration or more precisely in a mode with one full acoustic wavelength along the ceramic body, or two or more half wavelengths.

3,736,447

UNIFORM IONIZATION MEANS FOR MHD GENERATORS

Bert Zauderer, Bala Cynwyd, Pa., assignor to General Electric Company, New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 183,792
Int. Cl. H02k *45/00*
U.S. Cl. 310—11 **5 Claims**



Temperature limitations imposed by available materials require provision of other than purely thermal means for ionizing gas used in hot-gas magnetohydrodynamic (MHD) generators. Efficiency of such generators is markedly reduced by non-uniform ionization. Prior art ionization means, even when adequate, require use of appreciable fraction of length of expensive MHD channel to achieve high and uniform conductivity of gas plasma. Hot, cesium-seeded partially ionized gas passes through large-diameter conduit from source to nozzle feeding MHD channel. Magnetic field in pre-channel nozzle and conduit portions causes current flow in gas between short-circuited electrode pairs or pairs are fed repeated short high-voltage pulses continued by longer lower voltage pulses. Such current flow increases ionization everywhere in gas to desirable high and uniform level. Alternatively, gas not so seeded is ionized by irradiation from nuclear heat source; or gas not ionized is preionized by discharges between first pairs of electrodes, and then fully and uniformly ionized by discharges between later pairs of electrodes.

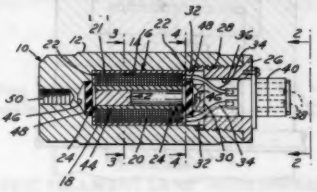
3,736,448

DISPLACEMENT TRANSDUCER

August G. Hebel, Jr., and August G. Hebel, III, both of 1257 18th Street, Detroit, Mich.

Filed Nov. 1, 1971, Ser. No. 194,373
Int. Cl. H02k *35/02*
U.S. Cl. 310—15 **2 Claims**

An electromechanical transducer for developing electrical signal measurements of mechanical vibrations. A magnet is guided for lengthwise movement within a coil whose length is substantially equal to that of the magnet. A high-permeability casing surrounds the coil and serves to concentrate the magnetic flux of the magnet such that the magnet tends to center



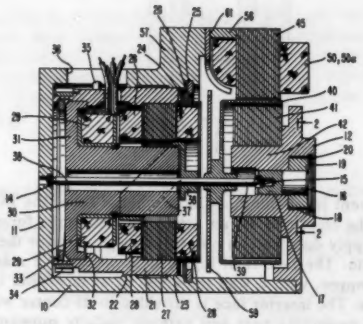
itself lengthwise of the coil. Upon oscillation of the transducer body on which the coil and the casing are fixedly mounted, the magnet oscillates lengthwise within the coil to develop the electric signal voltage.

3,736,449

ELECTRICAL APPARATUS

Charles C. Honeywell, and L. H. Volge, both of Montrose, Pa., assignors to The Bendix Corporation, Teterboro, N.J.

Division of Ser. No. 707,043, Feb. 21, 1968, Pat. No. 3,614,577. This application Jan. 18, 1971, Ser. No. 107,555
Int. Cl. H02k *17/44*
U.S. Cl. 310—171 **19 Claims**



A synchro electrical signal generator or rotary control transformer in combination with an induction servo motor, said transformer and motor having a common rotor shaft.

3,736,450

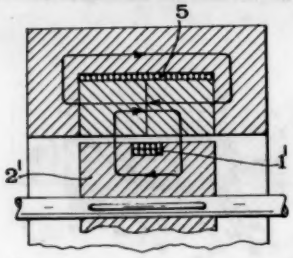
UNIPOLAR DOUBLE INDUCTOR DYNAMO

Raffaello Emaldi, Via Arduino 25, 10134 Turin, Italy

Filed Nov. 17, 1971, Ser. No. 199,467
Int. Cl. H02k *31/00*
U.S. Cl. 310—178 **3 Claims**

A unipolar double inductor dynamo having an anti-inductor winding for eliminating the axial flux produced by the induc-

tor windings in an armature or stator by generating a high anti-inductor flux and consequently a high saturation in the magnetic circuit of the anti-inductor, the inductor and anti-inductor rotating in opposite directions.



3,736,451

COOLED ELECTRODE FOR HIGH POWER ELECTRIC DISCHARGE LAMPS

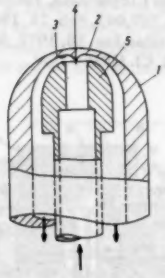
Gerhard Weninger, 15 Gabriele-Munter-Strasse, and Hanns-Peter Popp, 60 Hofbrunnstrasse, both of Munich, Germany

Filed July 12, 1972, Ser. No. 271,012

Claims priority, application Germany, July 29, 1971, P 21 37 987.3

Int. Cl. H01j *61/52*

U.S. Cl. 313—32 **6 Claims**



To prevent blackening of the discharge tube, the interior space of the electrode has an axially disposed tube forming a central supply duct and an outer discharge duct for the coolant therein. The face is of highly heat-conductive material, such as copper, with a wall thickness of at most that of the outer tube. The interior face is provided in its center with an internally projecting part and extends radially outwardly in concave curvature while the duct formed between supply tube and interior face is of a width small relative to the discharge duct. The projecting part which may be a depending tip, or a rod extends towards or may be mounted inside the supply tube.

3,736,452

HALOGEN MOTORCAR LAMP

Johannes Rijnders, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

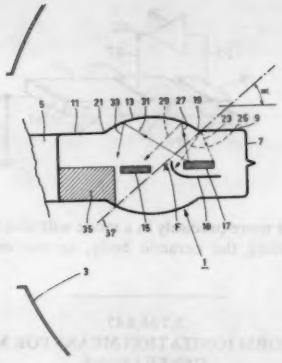
Filed Sept. 24, 1971, Ser. No. 183,548

Claims priority, application Netherlands, Sept. 30, 1970, 7014336

Int. Cl. H01k *1/26*

U.S. Cl. 313—115 **2 Claims**

A halogen filament lamp having two filaments for motorcar headlights. The envelope comprises two cylindrical end portions and a rotationally symmetric widened intermediate part. By suitable choice of the location of the transition between the cylindrical top portion of the envelope and the widened part relative to the location between the end faces of the two filaments facing each other it is achieved that parasitic light sources emanating from the anti-dazzle filament which would supply a dazzling beam do not occur.



3,736,453

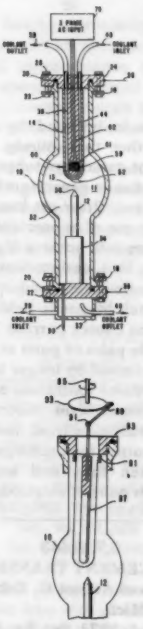
ARC CONTROL IN COMPACT ARC LAMPS

Charles G. Miller, Los Angeles, and Ralph E. Bartera, La Canada, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Jan. 22, 1971, Ser. No. 108,810

Int. Cl. H01j *1/02*

U.S. Cl. 313—146 **17 Claims**



Arc stabilization resulting in greater steadiness, and increased power input resulting in increased and brighter light

output in compact arc lamps are made possible by the use of magnetic fields or of equivalent mechanical motion to control the location of the attachment point of the arc to the anode. In one embodiment, magnets disposed within the anode and particularly, within a novel toroidal shaped anode are utilized to rotate the arc foot around a larger area of the tip. In another embodiment, magnets external to the lamp are utilized to the same effect. In yet another embodiment, mechanical movement of the anode causes the same effects. This allows increased power handling capability by tungsten-tipped anodes. For thin copper anodes, an improved cooling circuit allows the area of high efficiency heat exchange to coincide with the larger area of the anode subjected to arc attachment. Additionally, an axial gas circulating arrangement for the cathode can be pumped toward the flue of the toroidal anode to contribute to the cooling of both electrodes and the axial laminar jet of cooling gas around the arc stream is used to stabilize the arc, to increase the power input and the brightness of the lamp, and to increase the light output of the lamp.

3,736,454

ELECTRIC FILAMENT LAMP OR DISCHARGE LAMP

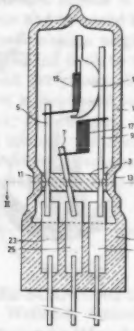
Johan Elisa Lambert Cornelis Huyskens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,342

Claims priority, application Netherlands, Apr. 11, 1970, 7005232

Int. Cl. H01j *1/88, 1/92, 5/02*

U.S. Cl. 313—243 **5 Claims**



An electric filament or gas discharge lamp comprising a tubular glass lamp vessel which is sealed at one end by a pinch seal and has a number of filaments or electrodes supported by stiff current conductors or members. The conductors or members are passed through a common transverse support and are secured to a metal foil connection outside of the pinch seal and preferably in the space of the lamp vessel.

3,736,455

SUPPORT FOR THE FILAMENT BODY OF A TUBULAR LAMP

Victor Rosalie Noteiteirs, and Eduard Jozef Philomena Janssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

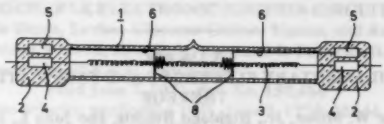
Filed Aug. 24, 1971, Ser. No. 174,354

Claims priority, application Netherlands, Aug. 27, 1970, 7012669

Int. Cl. H01j *1/96*

U.S. Cl. 313—274 **2 Claims**

A support for the filament body of tubular incandescent lamps, the support being formed by a length of metal wire having a coiled end surrounding the filament body and having an equally coiled portion engaging the inner wall of the lamp vessel, characterized in that the length of wire comprises a portion extending in the direction of length of the vessel and being secured in the pinch of the vessel.



3,736,456

ELECTRIC FILAMENT LAMP WITH IMPROVED FILAMENT SUPPORTING MEANS

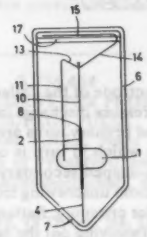
Joris Leendert Middelhoek, and Joseph Willem Snudo, Terneuzen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 25, 1971, Ser. No. 156,857

Claims priority, application Netherlands, July 3, 1970, 7009852

Int. Cl. H01j *1/94*

U.S. Cl. 313—278 **2 Claims**



In order to obtain a good fixation of the location of the filament in the envelope of an electric incandescent lamp, in particular a miniature lamp, a slit or pit-like depression is made in the bottom of the envelope against the sides of which the bent ends of pole or supporting wires present in the lamp are located.

3,736,457

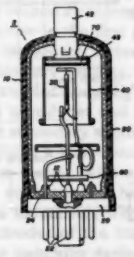
RADIATION SHIELDED ELECTRON DISCHARGE DEVICE

William F. Cullen, Philpot, Ky.; Fred F. Holub, Schenectady, N.Y., and Michael R. McCormick, Louisville, Ky., assignors to General Electric Co.

Filed Mar. 25, 1971, Ser. No. 128,056

Int. Cl. H01j *1/52, 19/40*

U.S. Cl. 313—313 **9 Claims**



An electron discharge device is provided with shields to protect against inadvertent emission of penetrating elec-

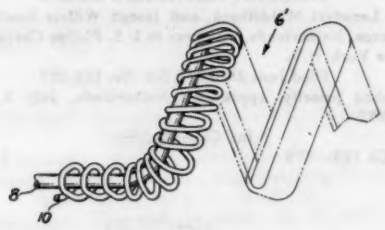
tromagnetic radiation. The positions and mounting of the shields is designed to provide shielding in all directions which is relatively undefeatable by inadvertent tampering by the user.

3,736,458

FILAMENTARY ELECTRODE AND FABRICATION THEREOF

Victor W. Miller, Jr., Highland Heights, and John L. Ballard, Columbus, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed July 6, 1971, Ser. No. 159,801
Int. Cl. H01k *1/14*
U.S. Cl. 313—344 **6 Claims**



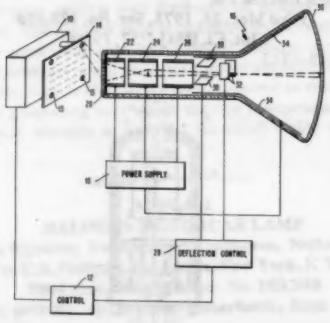
A filamentary electrode of the coiled coil loose fitting overwind type for low pressure discharge lamps. The fine overwind is coiled in oversized primary turns around the permanent primary mandrel wire which in turn is coiled into non-circular, suitably oval or egg-shaped secondary turns. The overwind is thereby prevented from unscrewing from the primary mandrel wire and the need for crimping, flattening or welding the ends of the coil prior to dissolving out the temporary mandrel wires used in coiling is avoided. Where there is further coiling into tertiary turns as in triple-coiled electrodes, tangling and shrinkage are minimized.

3,736,459

LAYER ACTIVATED HOLOGRAPHIC DATA SELECTION AND DISPLAY APPARATUS

Thomas J. Harris, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 19, 1971, Ser. No. 134,943
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 **4 Claims**



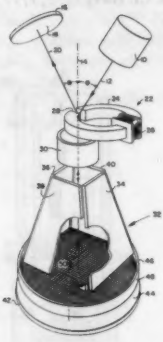
A character generator which is capable of producing a large and arbitrary character set. The character set is stored as a set of holograms on a hologram plate. The character that is desired to be generated is selected by the hologram selector which produces a beam of energy which illuminates the hologram of the desired character producing a reconstructed image of the desired character. The reconstructed image illuminates a photocathode internal to a vacuum envelope. The photocathode produces an electron image within the vacuum envelope which is then amplified, focused and positioned in the appropriate display position on a phosphor screen thus allowing an externally stored character to be reconstructed and displayed within the vacuum envelope. The provision is also made for changing the size of said character on display.

3,736,460

OFF-AXIS RETURN BEAM TUBE

Robert E. Rutherford, Jr., New Canaan, Conn., assignor to Columbia Broadcasting System, Inc., New York, N.Y.

Filed June 28, 1971, Ser. No. 157,143
Int. Cl. H01j *31/48*
U.S. Cl. 315—11 **10 Claims**



An electron beam tube of the return beam type in which the return beam follows a distinct path from the path of the primary beam to permit placement of a detector separated from the source at a position of minimum return beam diameter. A magnetic deflection field is provided to steer the primary beam from an electron gun on-axis into the focusing and deflection system for scanning of a target surface, and to oppositely steer the return beam off-axis for detection.

3,736,461

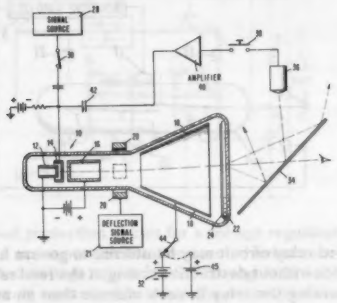
DARK TRACE STORAGE TUBE SYSTEM

Benjamin Kazan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 27, 1971, Ser. No. 175,550
Int. Cl. H01j *29/36*
U.S. Cl. 315—12 **6 Claims**

An electro-optical signal storing device is disclosed and more particularly, an improved "dark-trace" cathode ray storage tube. A cathode ray tube structure is provided having a cathodochromic viewing screen with a thin phosphor layer on its back surface. An electron gun produces an electron beam which is modulated by an input signal. Voltage is ap-

plied to the accelerating anode of the tube to allow the beam to penetrate the phosphor layer and darken the cathodochromic screen in the regions determined by the input signal and therefore produces a pattern on the screen. During the initial writing mode, the screen is scanned with a relatively low beam current and a high writing speed, thereby producing a dark-trace pattern having minimal contrast. After the dark trace pattern is written, the input signal is cut off and the anode voltage is reduced. By scanning the screen in raster fashion, the electron beam generates a flying light spot on the phosphor layer which is partially penetrated, causing limited darkening of the cathodochromic screen. During the scanning



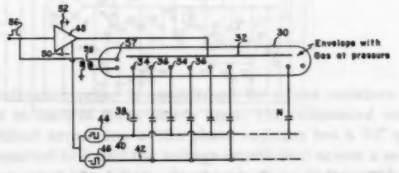
operation, the light from the phosphor screen which passes through the cathodochromic screen is reflected from a partially transmissive mirror and is sensed by a photocell capable of intercepting light over a wide angle. The output of the photocell is amplified and fed back to the control grid of the cathode ray tube. When the photocell senses a decrease in light, the beam current is increased so that when the beam scans a darkened area, the reduced light produces an increased beam current through the feedback loop such that, during scanning, the previously darkened areas will be further darkened relative to undarkened areas resulting in a high contrast image.

3,736,462

CLOCKED SCANNING SYSTEM

Lawrence S. Sliker, Welland, Ontario, Canada, assignor to International Scanning Devices, Inc., Fort Erie, Canada

Filed May 25, 1971, Ser. No. 146,752
Int. Cl. H01j 17/48
U.S. Cl. 315—84.6 2 Claims



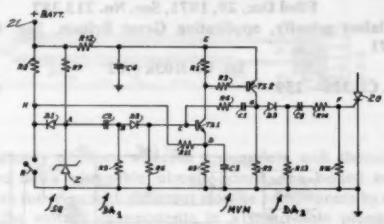
A clocked scanning glow discharge device wherein the rate of scan from end to end of a series of side by side glow discharge gaps between opposed electrodes in a common envelope is governed by a pair of alternating potential sources of opposite phase which add or substract to a bias potential on one of the electrodes an increment of potential sufficient to initiate or extinguish the glow discharge, capacitors for each gap being charged to effect extinguishment and prevent reversed scanning.

3,736,463

ELECTRONIC DEVICE FOR CONTROLLING A SILICON CONTROLLED RECTIFIER IN A CAPACITOR DISCHARGE ELECTRONIC IGNITION CIRCUIT

Eugenio Basso, Levico; Giacomo Gulino, Monza, and Antonio Veronese, Padova, all of Italy, assignors to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Filed June 7, 1971, Ser. No. 150,466
Claims priority, application Italy, June 5, 1970, 25544 A/70
Int. Cl. H03k 17/56
U.S. Cl. 315—209 SC 7 Claims



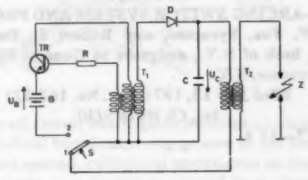
A silicon controlled rectifier controls a capacitor discharge into an electronic ignition circuit for internal-combustion engines. Spurious signals are prevented from operating the controlled rectifier.

3,736,464

CIRCUIT ARRANGEMENT FOR PRODUCING A HIGH VOLTAGE PULSE

Peter Lohberg, Rodheim V.D.H.; Hans Jurgen Katte, and Herbert Blieske, both of Frankfurt/Main, all of Germany, assignors to Braun Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 23, 1971, Ser. No. 165,056
Claims priority, application Germany, July 27, 1970, P 20 37 079.0
Int. Cl. H05b
U.S. Cl. 315—209 T 1 Claim



A circuit arrangement for producing a high voltage pulse comprising a capacitor, a switching device having a first switching position and a second switching position, a source of power, the switching device in the first position thereof couples the capacitor with the source, a transducer having a primary winding and a secondary winding, the switching device in the second position thereof coupling the capacitor to the primary winding of the transducer and producing thereby a high voltage pulse in the secondary winding of the transducer, the power source comprising a semi-conductor blocking oscillator having a transistor therein with a collector, base and emitter electrodes, the collector and base electrodes of the transistor being coupled inductively with the transducer, the collector and base electrodes of the transistor device being coupled by means of the switching device in the first position thereof with one terminal of a d.c. source, the emitter electrode being coupled with the other terminal of the d.c. source, the inductances in the collector and base circuits of the transistor have a third inductance coupled thereto, a diode

and a capacitor connected into a charging circuit for the capacitor, means including a further transducer means connected in a discharge circuit for the capacitor in another position of the switching device and a sparkgap connected across the discharge circuit.

3,736,465

VOLTAGE SUPPLY ARRANGEMENTS

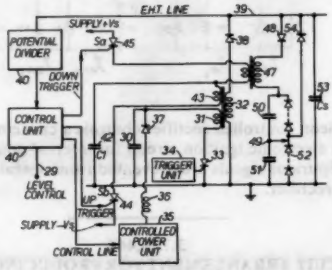
James Howard Rowe, Addlestone, England, assignor to Plessey Handel und Investments A.G., Zug, Gartenstrasse, Switzerland

Filed Dec. 29, 1971, Ser. No. 213,387

Claims priority, application Great Britain, Jan. 1, 1971, 35/71

Int. Cl. H03k *4/02*

U.S. Cl. 315—239 **6 Claims**



An E.H.T. voltage supply system comprising a relatively high voltage d.c. supply having a relatively high output impedance and low output capacitance, a second voltage supply arranged to charge a storage capacitor, and switch means for discharging the capacitor through the primary winding of a transformer to produce a higher voltage of the secondary winding which is combined with the voltage provided by the first voltage supply means.

3,736,466

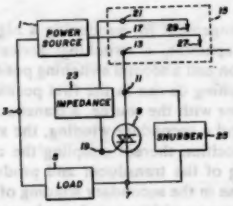
NON-ARCING SWITCH SYSTEM AND PROCESS

Richard W. Fox, Syracuse, and Robert L. Davies, Union Springs, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Filed July 13, 1971, Ser. No. 162,221

Int. Cl. H01h *9/30*

U.S. Cl. 317—11 A **7 Claims**



In order to prevent arcing upon opening a mechanical switch it is proposed to place an electronic signal controlled switch in series with the mechanical switch and to provide a second mechanical switch for opening the signal path to the electronic signal controlled switch before the mechanical switch is opened.

3,736,467

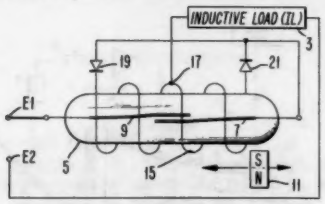
REED RELAY CIRCUIT FOR CONTROLLING INDUCTIVE LOADS

Herbert E. Meier, Vestal, and James C. Yarrington, Endicott, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1971, Ser. No. 171,667

Int. Cl. H01h *83/00, 9/30*

U.S. Cl. 317—11 A **8 Claims**



A reed relay circuit may be utilized to govern highly inductive loads without destructive arcing at the reed relay contacts by governing the relay in such manner than an auxiliary flux field is supplied by rectification of the current to the load, which provides an auxiliary field in which the current and the flux decay to zero at least once during each cycle. When the controlling flux is removed, the reed relay contacts will not open until the auxiliary flux decreases to a point at which its generating current is sufficiently low that adverse arcing and other current effects at the contacts are eliminated.

3,736,468

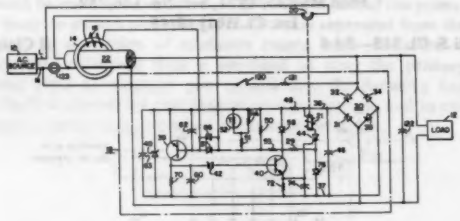
GROUND FAULT INTERRUPTER APPARATUS

John R. Reeves, Trafford; George F. Bogel, Pittsburgh, and Francis T. Thompson, Murrysville, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 30, 1971, Ser. No. 158,338

Int. Cl. H02h *3/28*

U.S. Cl. 317—18 D **4 Claims**

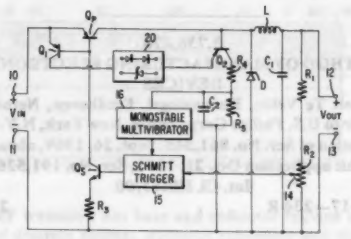


A differential transformer for sensing the fault current in a ground fault interrupter includes a magnet toroid with the power leads extending through it in a co-axial arrangement to provide single turn primary conductors. Stray current resulting from uneven placement of the power conductors within the toroid is thereby avoided; the relation of each of the coaxial conductors to the toroid is the same. Single turn coaxial conductors are highly advantageous in providing a miniaturized differential transformer with which there may be employed new miniature trip circuits of solid state components providing good noise immunity, high input impedance, inverse time delay and temperature compensation.

3,736,469
SWITCHING REGULATOR OVERLOAD PROTECTION CIRCUIT

Dale Milton Baugher, Flemington, N.J., and Kenneth Walter Awkward, Hauppauge, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 14, 1972, Ser. No. 226,076
Int. Cl. H02h 3/08
U.S. Cl. 317—22 14 Claims

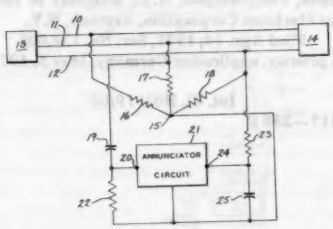


An overload protection circuit for a voltage regulator of the type having a series pass element connected between a source of unregulated voltage and a load. The regulator includes a feedback circuit connected between the output terminals and the series pass element for regulating the load voltage. A protection circuit is connected between one main terminal of the series pass element and the feedback circuit to sense an overcurrent through the pass element and to provide a signal which renders the pass element non-conductive.

3,736,470
METHOD AND APPARATUS FOR DETECTING PHASE IMBALANCES

David E. Ford, Milwaukee, and Richard W. Waltz, New Berlin, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Nov. 15, 1971, Ser. No. 198,597
Int. Cl. H02h 3/28
U.S. Cl. 317—27 R 9 Claims

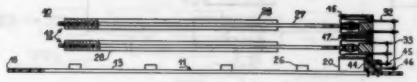


A reference point is established by phase resistors connected to each of three power lines. The referenced voltage established across one of the phase resistors has a 30° phase lag emparted to it and the voltage established across a second phase resistor has a thirty degree phase lead emparted to it. Under normal operating conditions the two phase-displaced voltages cancel when summed by an annunicator circuit, but when an imbalance or phase failure occurs in the power source, cancellation is not obtained and an annunciation signal is generated. A second embodiment emparts a 60° phase lead to a first referenced voltage and a 60° phase lag to a second referenced voltage. The phase-displaced voltages are identical under normal operating conditions, but when an imbalance or phase failure occurs in the power source, a difference is sensed by the annunciator circuit and an annunciation signal is generated.

3,736,471
ASSEMBLAGE ELEMENT FOR FUNCTIONAL UNIT WITH CARD CONNECTOR MEANS

Michel Donze; Bernard Claude Kohler, and Gerard Philippe Manoussi, Paris, France, assignors to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed Nov. 16, 1971, Ser. No. 199,204
Claims priority, application France, Nov. 18, 1970, 7041369
Int. Cl. H02b 1/02
U.S. Cl. 317—101 D 4 Claims

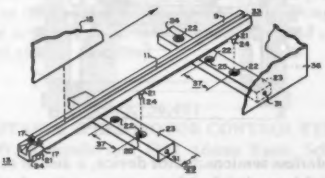


A read-only memory wherein a complete unit thereof is fabricated as a pluggable circuit board, the board being adapted to function with different storage components by supporting the storage components in a removable pluggable fashion, the board proper holding in fixed form those elements and circuits which are invariant for different storage components.

3,736,472
CIRCUIT BOARD GUIDE AND SUPPORT APPARATUS HAVING IMPROVED FASTENINGS FOR RIGID ASSEMBLY

Edward M. Muldoon, Jr., 3817 Mistral Drive, Huntington Beach, Calif.

Filed Oct. 4, 1971, Ser. No. 186,251
Int. Cl. H05k
U.S. Cl. 317—101 DH 2 Claims



An improved circuit board guide includes an element which has a longitudinal board-receiving groove in the front surface and which has spaced, cylindrical protrusions on the back surface, each protrusion having a central bore therein which receives a mounting pin that is attached to a mounting bar. The cylindrical protrusions are received in recesses about the mounting pins to form a rigid structure that supports a circuit board along opposite longitudinal edges.

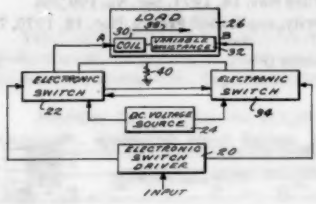
3,736,473
DRIVER CIRCUITRY

Charles D. Pugh, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed July 1, 1971, Ser. No. 158,965
Int. Cl. H01f 7/18
U.S. Cl. 317—137 10 Claims

A clutch or similar device electronic driver circuit whereby the clutch coil is connected in series with a variable resistance circuit, such as a parallel connected diode and resistor, which displays a first resistance when current flows through the serial combination in a first direction to actuate the clutch and a second greater resistance when current flows through the serial combination in an opposite direction to produce a small reverse bias voltage across the coil which serves to demag-

netize it and thus increase the speed of response of the coil as it is deactuated. Two electronic switching circuits are connected to the load for reversing the polarity of the voltage across the load and accordingly actuate and demagnetize the clutch alternately in response to input signals. A high transient



current is produced at the time the coil is activated to ensure a quick response from the clutch. In the embodiment set forth below, the load comprises two alternately connected coils each having a variable resistance connected in series with it so that one coil is actuated while the other is being demagnetized and vice versa.

3,736,474

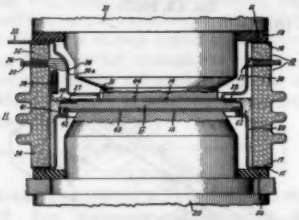
SOLDERLESS SEMICONDUCTOR DEVICES

Frederick R. Sias, Wellingford, Pa., assignor to General Electric Company, Philadelphia, Pa.

Division of Ser. No. 827,116, May 16, 1969, which is a continuation of Ser. No. 585,428, Oct. 10, 1966. This application Dec. 21, 1970, Ser. No. 100,327

Int. Cl. H01 *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**



In a solderless semiconductor device, a disc of semiconductor material is sandwiched between opposing electrodes of a sealed housing where it is centered by a metal ring which is removably seated on a peripheral flange of one of the electrodes.

3,736,475

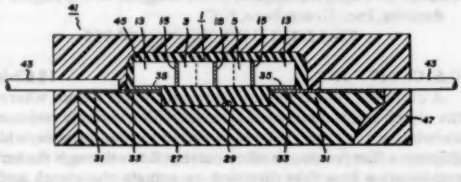
SUBSTRATE SUPPORTED SEMICONDUCTIVE STACK

Warren E. Berner, Camillus, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Oct. 2, 1969, Ser. No. 863,209

Int. Cl. H01 *3/00, 5/00*

U.S. Cl. 317—234 R **6 Claims**



A plurality of junction containing semiconductive elements are bonded in series relation with semiconductive attachment elements of low resistivity bonded to opposite ends of the stack to form a semiconductive sub-assembly. The sub-assembly is bonded to metallized spaced lands with the junction containing elements spaced from the intervening surface of the substrate. Electrical conductors are bonded to the metallized lands in spaced relation to the semiconductive sub-assembly. The sub-assembly is etched in position on the lands and thereafter encapsulated with a passivant without intermediate handling. A plastic casement is molded around the sub-assembly and passivant. A plurality of substrates are initially integrally associated.

3,736,476

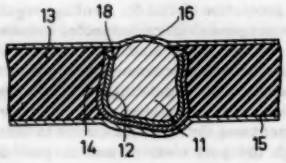
METHOD OF MANUFACTURING ELECTRONIC DEVICES

Ties Siebolt Te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 861,345, Sept. 26, 1969, abandoned. This application Oct. 21, 1971, Ser. No. 191,526

Int. Cl. H01 *5/00*

U.S. Cl. 317—234 R **2 Claims**



An electronic device comprising a layer of grains consisting of grains having a low-ohmic core and a high-ohmic enveloping layer which are embedded in a plastic foil, from which grain parts project on both sides, said projecting parts being contacted.

3,736,477

MONOLITHIC SEMICONDUCTOR CIRCUIT FOR A LOGIC CIRCUIT CONCEPT OF HIGH PACKING DENSITY

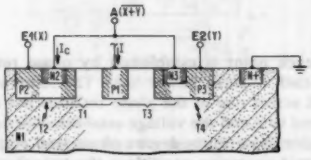
Horst H. Berger, Sindelfingen, Germany, and Siegried K. Wiedmann, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1971, Ser. No. 134,008

Claims priority, application Germany, May 5, 1970, P 20 21 824.0

Int. Cl. H01 *19/00*

U.S. Cl. 317—235 R **14 Claims**

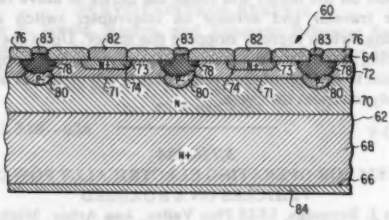


A monolithic semiconductor circuit comprises a lateral PNP transistor and an inversely operated vertical NPN transistor. The lateral transistor is formed by a pair of mutually spaced P-type regions diffused in an N-type semiconductor body. The collector region has diffused therein a region of N-type and constituting the collector of the vertical transistor. The semiconductor body constitutes the base region of the lateral transistor and the emitter region of the vertical transistor.

3,736,478
RADIO FREQUENCY TRANSISTOR EMPLOYING HIGH AND LOW-CONDUCTIVITY BASE GRIDS

Harold Seymour Veloric, Morristown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sept. 1, 1971, Ser. No. 176,811
Int. Cl. H01l 5/02, 11/08
U.S. Cl. 317—235 R 6 Claims

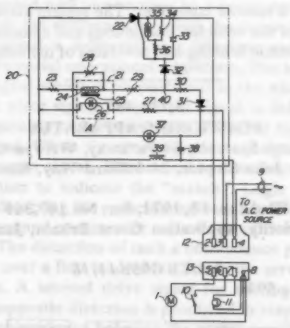


An RF transistor has base and collector regions and a plurality of discrete emitter segments extending into the base region. A highly conductive intermetallic, such as PtSi grid extends into the base region and individually surrounds each emitter segment. The highly conductive intermetallic, such as PtSi grid is separated from the collector region by a highly resistive grid of the same conductivity type as the base region.

3,736,479
SPEED CONTROL DEVICE FOR SINGLE PHASE MOTORS

Katsuji Soeda, Sukagawa-shi, Japan, assignor to Yamamoto Electric Industrial Co., Ltd., Sukagawa-shi, Japan

Continuation-in-part of Ser. No. 139,567, May 3, 1971, abandoned. This application Oct. 12, 1971, Ser. No. 188,273
Claims priority, application Japan, May 31, 1971, 46/44923
Int. Cl. H02p 5/28
U.S. Cl. 318—245 6 Claims

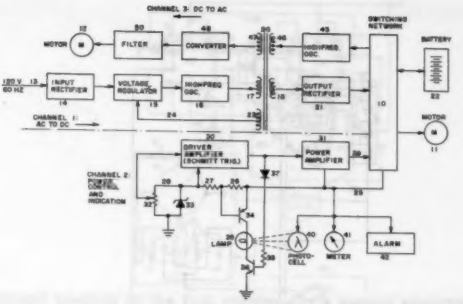


A speed control device for single phase motors is disclosed, which comprises a thyristor connected in series with a motor, and a trigger signal generator means for controlling the triggering phase of the thyristor, said trigger signal generator means including a series circuit of a variable resistor means, a resistor and a rectifier connected between both terminals of an a-c source and a capacitor connected between the cathode of said thyristor and the connection of said variable resistance means and said resistor and also across the cathode and the anode of said thyristor. The variable resistor means includes a light source, a light-sensitive element facing the light source and having its resistance varied in accordance with the amount of incident light from the light source, and a movable shutter plate interposed between the light source and the light-sensitive element and capable of being moved between a position to interrupt the light from the light source and a position not to interrupt the light from the light source.

3,736,480
BATTERY RUN D-C MOTOR SPEED CONTROL, CHARGING AND STEERING SYSTEMS

Joo C. Lee, c/o Temptron, Inc., 1684 S. Wolf Road, Wheeling, Ill.

Filed Feb. 11, 1972, Ser. No. 225,565
Int. Cl. H02m 3/14; H02p 5/46
U.S. Cl. 318—51 18 Claims



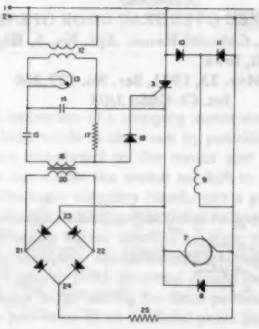
A first system for energizing a d-c motor includes a switching network for passing energy to and from a battery, and to the d-c motor. The battery can energize the motor over the switching network, and the battery can be recharged over a first channel supplied with a-c energy which is rectified and passed through the switching network to the battery. A second channel provides power control to regulate the level of d-c energy to the motor and thus control motor speed, and also provide an indication of the battery power available. A third channel energizes an r-f oscillator over the switching network from the battery. The a-c voltage from the r-f oscillator is rectified, filtered and applied to an alternate d-c motor.

Another system includes a pair of d-c motor groups, with two separate channels for energizing each motor group simultaneously or independently. This provides a steering function in addition to the optional battery charging speed control arrangements already described.

3,736,481
ADJUSTABLE SPEED MOTOR CONTROL SYSTEM

Ernst F. W. Alexanderson, 1132 Adams Road, Schenectady, N.Y.

Filed Mar. 19, 1968, Ser. No. 714,363
Int. Cl. H02p 5/16
U.S. Cl. 318—331 6 Claims



A motor speed control comprising an SCR phase control having saturable reactor means modified by EMF feedback from the motor through a diode bridge arrangement.

3,736,482

BATTERY POWERED ELECTRIC TRACTION SYSTEM

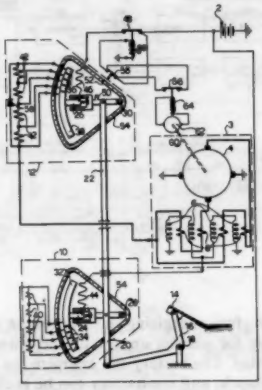
Giampiero Brusaglino, Moncalieri, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Oct. 28, 1971, Ser. No. 193,290

Claims priority, application Italy, Nov. 17, 1970, 70832 A/70

Int. Cl. H02p 7/06, 3/14

U.S. Cl. 318—338 3 Claims



A speed controlled electric traction system comprising a direct current compound electric motor having means for controlling its speed from zero up to its maximum value with a minimum energy loss on the speed regulation. The means for controlling the speed of the motor comprise a rheostat in series with the shunt field windings of the motor and linked to a voltage controller in series with the series field winding and armature of the motor. The voltage controller can be one of a number of different types such as a rheostat, a potentiometer allied to a controlled rectifier or a potential dividing switch arrangement acting on the individual cells of the battery. The voltage controller of the armature circuit and the rheostat of the shunt winding are linked together and to an operating member such that as the motor is controlled from standstill the maximum voltage is applied to the shunt winding as the voltage on the armature winding is progressively increased up to a maximum value, and thereafter the voltage on the armature winding is maintained at a maximum while the voltage on the shunt field winding is progressively reduced until the motor attains its maximum speed.

3,736,483

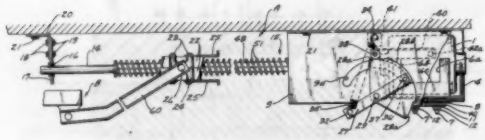
MOTORIZED OVERHEAD DOOR OPENER

George D. Conlee, Colonial House, Apt. No. 6, Highway 169 South, Humboldt, Iowa

Filed Mar. 23, 1971, Ser. No. 127,200

Int. Cl. G05d 3/08

U.S. Cl. 318—469 16 Claims



The output shaft of a motor is connected directly to a worm shaft which moves a traveler connected to the door. The motor includes a second centrifugal switch in the relay coil circuit whereby the motor will stop upon the door engaging stops in either direction. The worm shaft includes a length of spiral wire locked in place on thin wall tubing rectangular in cross section. The method of producing the worm shaft includes placing the length of spiral wire on a length of cylindrical tubing and then applying pressure to the tubing between adjacent coils causing corners to be formed which lockingly engage the wire coils. A predetermined axial force in either direction on the motor will cause the motor to move relative to the traveler and actuate an interrupter switch and a reversing switch thereby stopping the motor. Upon the relay coil being reactivated the motor will then move in the opposite direction to the end of the cycle where it will then shut off and be ready to repeat the cycle.

3,736,484

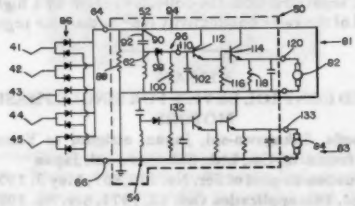
SYSTEM FOR OPERATING ELECTRICALLY POWERED VEHICLES ON A ROADBED

Robert J. Reynolds, 1543 Pine Valley, Ann Arbor, Mich., and Herman F. Deyerl, P.O. Box 3721, Santa Monica, Calif.

Filed Sept. 27, 1971, Ser. No. 184,105

Int. Cl. G05d 1/08; B64c 13/18

U.S. Cl. 318—587 18 Claims



A system for controlling wheeled vehicles on a track. The system provides for simultaneous remote control of a number of vehicles which receive both power and control signals from conducting elements on a track so configured as to receive the signals from a remote controller. The system allows unlimited steerability of the vehicles, continuous and smooth speed control, and dynamic braking and reversing of the vehicles.

3,736,485

POSITIONING APPARATUS

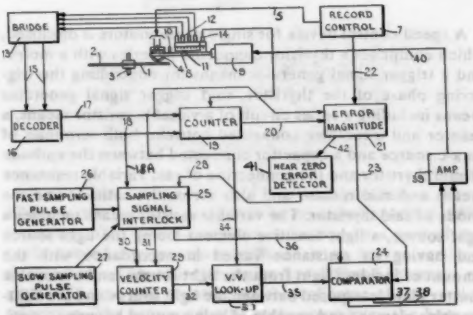
Gordon George Scarrott, 34 Parkway, Welwyn Garden City, and Brian John Steptoe, 24 Millard Way, Hitchin, both of England

Filed Jan. 18, 1971, Ser. No. 107,369

Claims priority, application Great Britain, Jan. 17, 1970, 2,358/70

Int. Cl. G05b 11/18

U.S. Cl. 318—594 11 Claims



A servo system is shown applied to a transducer head. A count of pulses representing movement is subtracted from a

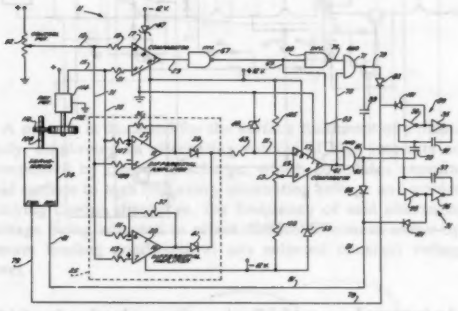
digital required position representation giving an error signal. The velocity of movement is also calculated from said pulses and sampling pulses. A predetermined velocity function is formed with an accuracy that varies in a predetermined way as the head nears the required position. A comparator receives the error and function signals and controls a motor drive amplifier.

3,736,486

SERVO CONTROL SYSTEM

George K. Gould, Roslyn, and Armando Belmares Sarabia, Long Beach, both of N.Y., assignors to Teletronics International Inc., New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,634
Int. Cl. G05b 5/01
U.S. Cl. 318—624 9 Claims



A digital servo-motor control and drive system is disclosed. A control signal for changing the servo-motor position, and a position signal which is proportional to the servo-motor position are compared with one another by a comparator. A signal proportional to the difference between the control signal and the position signal is delivered to a full-wave rectifier using high-gain differential operational amplifiers. The latter circuit produces a signal which is proportional to the absolute magnitude of the error signal. This error signal is delivered to a second comparator which compares the error signal with a reference signal. When the error signal is equal to or greater than the reference signal, The second comparator changes its output condition to indicate the "match". Logic circuitry is provided for detecting the coincidence between the latter condition of the second comparator and one condition of the first comparator. The detection of such a coincidence produces an output signal over a first lead which drives the servo-motor in one direction. A second drive signal for driving the servo-motor in the opposite direction is produced in response to the detection of coincidence between the match condition of the second comparator and the opposite output condition of the first comparator, thus indicating a reversal of polarity of the difference between the control and position signals. This servo control system has a very precisely controllable "deadband", and is relatively insensitive to electrical noise.

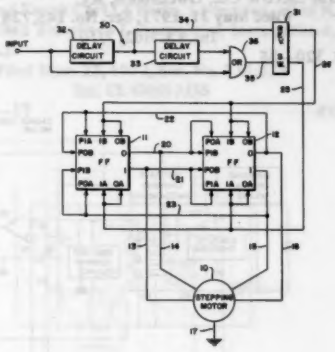
3,736,487

STEPPING MOTOR DRIVE CIRCUIT

Harold D. Cook, Wheaton, and Owen F. Davis, Des Plaines, both of Ill., assignors to Teletype Corporation, Skokie, Ill.

Filed Aug. 3, 1966, Ser. No. 570,077
Int. Cl. H02k 37/00
U.S. Cl. 318—696 3 Claims

A circuit for moving the rotor of a stepping motor from one position to another without vibration or oscillation including means for energizing the magnets of the stepping motor that would normally be energized to move the rotor of the motor from a first position to a second position for a first predetermined period of time, means for energizing the magnets that would normally be energized to return the rotor from the



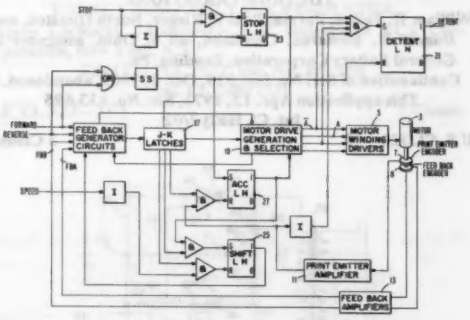
second position to the first position for a second predetermined period of time and means for re-energizing the magnets would normally be energized to move the rotor from the first position to the second position.

3,736,488

STEPPING MOTOR CONTROL SYSTEM UTILIZING PULSE BLANKING AND PULSE INJECTION TECHNIQUES INCLUDING PLURAL SHAFT ENCODER

Dennis G. Abraham, Vestal; Paul P. Grenchus, and Ray A. McSparran, both of Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 13, 1971, Ser. No. 171,671
Int. Cl. G05b 19/40
U.S. Cl. 318—696 5 Claims

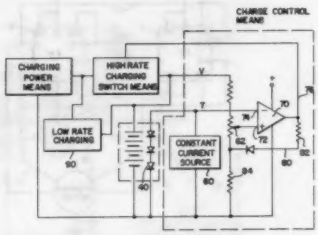


Improved operation of a stepping motor normally operating in a closed loop mode is obtained by providing suitable logic circuit means connected to the motor and to the feedback paths which can cause the motor to shift to a higher slewing rate, when the logic circuitry blanks out a portion of a feedback pulse, thereby causing that pulse to appear like two pulses to the stepping motor input. The logic circuitry can also improve the stopping sequence of the stepping motor by switching the system from a normal closed loop running mode to an open loop mode during the final portion of the stopping sequence by provision of an artificial pulse inserted in place of the final feedback pulse which would normally be provided. The logic circuit scheme also can cause the motor to decelerate in an improved manner by blanking out a portion of the feedback pulse, thus retarding the motor operating field.

3,736,489
TEMPERATURE SENSING SYSTEM FOR RECHARGEABLE BATTERIES

Ferdinand H. Mullersman, Gainesville, Fla., assignor to General Electric Co., Owensboro, Ky.

Filed May 21, 1971, Ser. No. 145,724
Int. Cl. H02j 7/10
U.S. Cl. 320—35 6 Claims



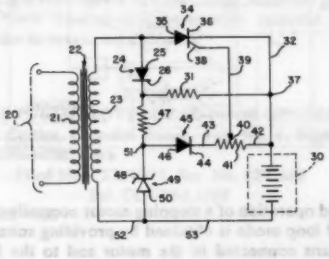
An improved temperature sensing system for rechargeable batteries is provided which utilizes the voltage developed across one or a group of series connected diodes such as, for example, silicon diodes, at a preselected constant current to indicate the temperature of the battery and to accordingly adjust the level of battery voltage at which charge control action should be accomplished.

When constant current charging is used, the proportionality between the voltage across the diodes and the desired voltage at which a high charge rate is modified can be made constant over a large temperature range by selecting the proper level of constant current to be passed through the diodes.

3,736,490
BATTERY CHARGER WITH VOLTAGE COMPARATOR CONTROL CIRCUIT WHICH IS INSENSITIVE TO LINE VOLTAGE VARIATIONS

William H. Fallon, Parma; Paul P. Rieger, North Olmsted, and Donald K. Richards, Cleveland, all of Ohio, assignors to General Battery Corporation, Reading, Pa.

Continuation of Ser. No. 863,919, Oct. 6, 1969, abandoned.
This application Apr. 13, 1971, Ser. No. 133,695
Int. Cl. H02j 7/02
U.S. Cl. 320—39 3 Claims

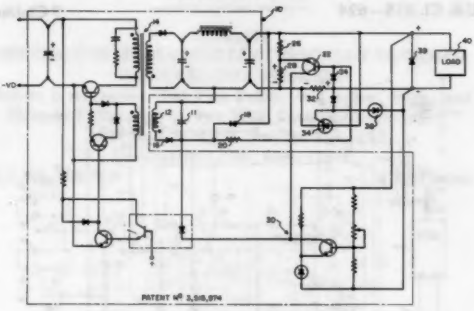


Control circuits are disclosed, capable for use for charging batteries, for providing a first continuous power output to a load and a second supplemental controlled output responsive to the voltage level of the load. Both single phase and three phase embodiments utilize a controlled rectifier having its gate signal controlled by a signal developed on the tap of a variable resistor connected to the load. The voltage on the load is compared to a reference voltage across a zener diode so that when the load voltage drops, the controlled rectifier conducts to provide supplemental direct current output to the load. A high leakage transformer is utilized in both the single phase and three phase embodiments, the high leakage transformer acting to maintain the reference voltage across the zener during variations of line voltage, so that the control circuit is continuously operative during such line variations.

3,736,491
DC-TO-DC REGULATED CONVERTER CURRENT FOLDBACK POWER

Karl H. Kuster, Glendale Heights, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 7, 1972, Ser. No. 242,172
Int. Cl. H02m 1/18; H02n 7/14
U.S. Cl. 321—14 4 Claims

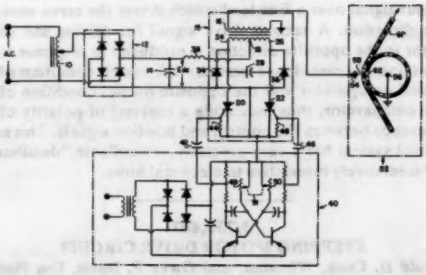


An improved current foldback power supply wherein a foldback regulating transistor circuit is coupled across the power supply to limit output current in an overload state without dissipating excessive power. Instantaneous large overloads have overcurrent protection provided by a crowbar circuit.

3,736,492
FILM TREATING METHOD

Louis A. Rosenthal, Highland Park, and Donald A. Davis, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 862,412, Sept. 30, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,376
Int. Cl. H02m 7/48
U.S. Cl. 321—45 R 2 Claims

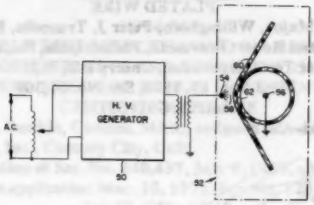


A method is disclosed for the surface treatment of a plastic body by exposure to a high intensity voltage accompanied by corona discharge wherein said voltage is a sequence of alternating-directional, sonic frequency pulses of electrical voltage.

3,736,493
FILM TREATING PROCESS

Louis A. Rosenthal, Highland Park, and Donald A. Davis, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 862,307, Sept. 30, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,377
Int. Cl. H02m 7/48
U.S. Cl. 321—45 R 4 Claims

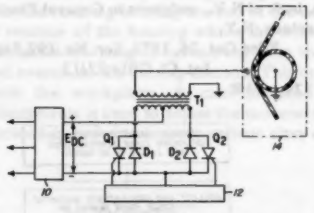


A process is disclosed for the surface treatment of a plastic body, employing an alternating voltage of high intensity accompanied by corona discharge, which comprises exposing said surface to high frequency alternating voltage and accompanying corona discharge, the frequency of said alternating voltage being adjusted to effect surface treatment under optimum loading conditions at any selected constant voltage level.

3,736,494
APPARATUS FOR FILM TREATMENT

Louis A. Rosenthal, Highland Park, and Donald A. Davis, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 66,833, Aug. 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 862,307, Sept. 30, 1969, abandoned, and a continuation-in-part of Ser. No. 862,412, Sept. 30, 1969, abandoned. This application July 12, 1971, Ser. No. 161,598
Int. Cl. H02m 7/48
U.S. Cl. 321—45 R 16 Claims

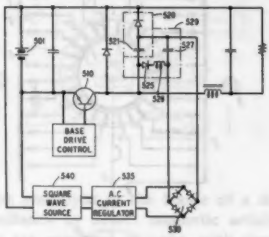


Method and apparatus are disclosed for the surface treatment of a plastic body by exposure to a high intensity voltage in the sonic frequency range accompanied by corona discharge, which comprises employing as said voltage a series of alternating-directional pulses of electrical voltage produced by energizing a pulse-forming network in which the requisite inductance and capacitance are provided exclusively by the transformer and the film treating load.

3,736,495
SWITCHING REGULATOR WITH HIGH EFFICIENCY TURNOFF LOSS REDUCTION NETWORK

Edwin Theodore Calkin, Parsippany; Billy Harold Hamilton, Summit, and Frank Carl La Porta, Livingston, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 22, 1972, Ser. No. 236,833
Int. Cl. G05f 1/56
U.S. Cl. 323—17 4 Claims

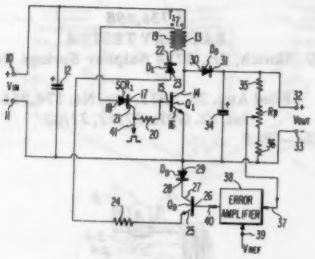


A switching regulator includes a turnoff loss reduction network to reduce switching losses in the switching transistor during turnoff. A capacitive energy storage device is discharged during the turnoff of the switching transistor to retard the collector-emitter voltage rise. The regulator, in addition, includes a charging network to losslessly charge the capacitive energy storage device.

3,736,496
ENERGY PUMP VOLTAGE REGULATOR

Eugene Lachocki, Turnersville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,286
Int. Cl. G05f 1/56
U.S. Cl. 323—22 T 7 Claims



A circuit for increasing and regulating the voltage appearing at the input terminals of a power supply. A plurality of cascaded stages are provided. Each stage comprises: an inductive energy storage device; a switching device; a control device; and a discharge path. Control signals, having a selectable sequential time relation therebetween, are provided to the stages so that energy discharged from adjacent stages is caused to overlap in time. The amount of overlap is adjustable and is dependent upon the sequential time relation between the control signals which is selected.

3,736,497

CONTACTLESS DEVICE FOR ACTUATING A SIGNAL

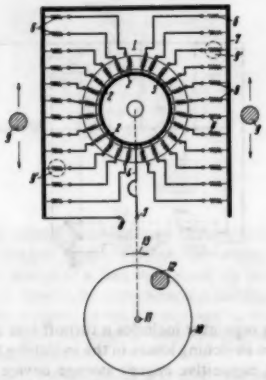
Horst Schweikart, Offenburg, Germany, assignor to Gehap Gesellschaft fur Handel und Patentverwertung mbH & Co. KG, Sasbachwalden, ub. Achern, Germany

Filed Nov. 1, 1971, Ser. No. 194,419

Claims priority, application Germany, Oct. 31, 1970, P 20 53 524.4

Int. Cl. H01c 7/16

U.S. Cl. 323—80 8 Claims



A device for triggering a signal without the use of mechanical contacts for application in alarm clocks, signal clocks, time switching clocks for electronic devices, start and stop time clocks, short time clocks and the like, consisting of a magnetic dependent electronic control circuit coupled to the clockwork so that a signal is triggered as desired by a changing magnetic field within the clockwork. A plurality of preferably 24 magnetic field dependent resistors are mounted equally from each other on a ring and connected to an inner distribution bar. A second row of magnetic field dependent resistors are connected with an outer distribution bar so that small permanent magnets mounted on a disc and connected with the clockwork of the clock are moved adjacent to the magnetic field dependent resistors at desired preset time intervals so as to operate the electronic control circuit and produce and indication signal.

3,736,498

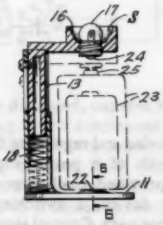
BATTERY TESTER

William G. Skutch, Jr., 3724 Sulphur Springs Road, Toledo, Ohio

Filed Aug. 25, 1971, Ser. No. 174,866

Int. Cl. G01n 27/42, 31/02

U.S. Cl. 324—29.5 5 Claims



A battery tester comprising an indicator lamp carried by an arm extending over a base which receives a battery to be tested. The arm is attached to a plunger, vertically slidable within a stem connected to the base. A bias spring urges the arm to an uppermost position on the stem. Conductive means on the base, stem, plunger and arm provide a partial circuit between the lamp and a first pole of the battery in contact with the base. Depression of the arm from its uppermost position places a protruding terminal on the lamp in contact with a second pole on the battery thereby completing a circuit between the battery and the lamp.

3,736,499

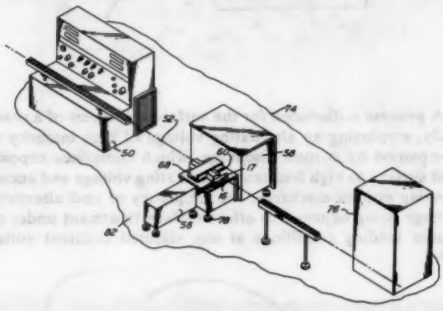
SYSTEM AND METHOD FOR MAGNETICALLY TESTING PLATED WIRE

James M. Major, Willingboro; Peter J. Truscello, Berlin, both of N.J., and Robert Provasnik, Philadelphia, Pa., assignors to Computer Test Corporation, Cherry Hill, N.J.

Filed Aug. 17, 1970, Ser. No. 64,309

Int. Cl. G01r 33/12

U.S. Cl. 324—34 R 24 Claims



A method and system for magnetically testing discrete regions of plated wire used to provide storage memory elements in computers. The system provides for controlled movement and positioning of the plated wire within an electronic test station responsive to coded current test signals from a magnetic test system. A motorized drive assembly moves the plated wire through the test station and is actuated by command signals sent by a control system. The control system may be automatically controlled by signals generated from the magnetic test system or manually by operator instructions to actuate the motorized drive assembly.

3,736,500

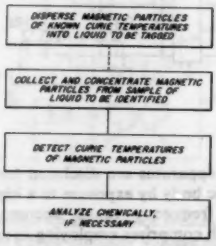
LIQUID IDENTIFICATION USING MAGNETIC PARTICLES HAVING A PRESELECTED CURIE TEMPERATURE

Ami E. Berkowitz, Schenectady, and William H. Meiklejohn, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 26, 1971, Ser. No. 192,246

Int. Cl. G01r 33/12

U.S. Cl. 324—34 R 15 Claims


DISPERSE MAGNETIC PARTICLES OF KNOWN CURIE TEMPERATURES INTO LIQUID TO BE TAGGED
COLLECT AND CONCENTRATE MAGNETIC PARTICLES FROM SAMPLE OF LIQUID TO BE IDENTIFIED
DETECT CURIE TEMPERATURES OF MAGNETIC PARTICLES
ANALYZE CHEMICALLY, IF NECESSARY

Methods are disclosed for uniquely identifying liquids so that a particular liquid may be distinguished from other similar

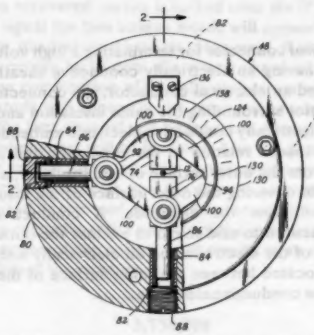
liquids. In one embodiment, an identification tag comprising sub-micron size magnetic particles of at least one preselected-Curie temperature is introduced into the liquid to be tagged. That liquid is then distinguishable from other similar liquids by its unique identification tag. Identification of a particular liquid, such as crude oil, for example, is then achieved by detecting the presence of the previously introduced identification tag. In the event of an "oil spill," for example, the party liable for the spill can then be readily determined, merely by measuring the Curie temperatures of magnetic particles extracted from a sample of the spilled oil.

3,736,501

ROTATABLE TEST DEVICE HAVING DIAMETRICALLY OPPOSED SENSORS AND COUNTERWEIGHTS INTERLINKED FOR RADIAL MOVEMENT BY CENTRIFUGAL FORCE

Thomas R. Donkin, Chelsea, Mich., assignor to Automation Industries, Inc., Century City, Calif.

Continuation of Ser. No. 840,437, July 9, 1969, abandoned.
This application Mar. 25, 1971, Ser. No. 128,174
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **6 Claims**



A material tester is described in the embodiments set forth herein which is adapted to rotate pickup probes about a workpiece such as a continuous wire or rod. Weights are spatially connected to pickup probes and are biased towards the workpiece. The weights and probes are pivotally mounted to one another and are carried by a rotatable housing. Guide shafts are attached to the weights and probes and are slidable in mating openings within the rotatably housing. The guide shafts are disposed within the rotating housing normal to the centerline of the axis of rotation of the housing where the workpiece is disposed. By rotation the weights move away from the center of rotation and overcome the biasing thereon. This moves the probes towards the workpiece. A cam included in the described embodiments is used to adjust the movement of the weights and probes in order to inspect various sizes of workpieces.

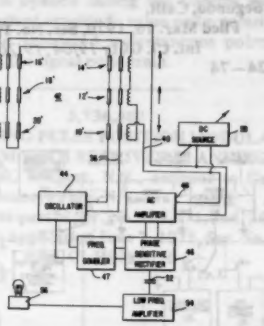
3,736,502

SERIES STRING FLUX GATE MAGNETIC SENSOR APPARATUS WITH ADDITIVE RESPONSE

Erick O. Schonstedt, Reston, Va., assignor to Schonstedt Instrument Company, Reston, Va.

Filed Jan. 28, 1971, Ser. No. 110,535
Int. Cl. G01r *33/04*
U.S. Cl. 324—43 R **9 Claims**

Multiple-unit, flux-gate, magnetic sensor apparatus in which a single excitation wire passes through the magnetic cores of the sensor units in succession. The signal pickup windings of the units are connected in series, the polarity of certain windings being opposite to that of others for balancing out ambient fields, and DC being supplied to the pickup windings for neutralizing any residual unbalance. A string of magnetic sensor units may be employed in the frame of a doorway for perimeter surveillance to detect magnetic articles such as guns. The units are arranged in pairs, with signal winding polarities selected to produce additive response.

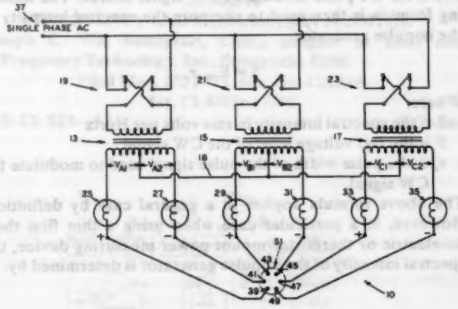


3,736,503

MULTIPLE CONDUCTOR CONTINUITY AND SHORT CIRCUIT TESTING DEVICE

Kenneth W. Coleman; John R. Peltz, and Clayton L. Stoldt, all of Warren, Pa., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,013
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **8 Claims**

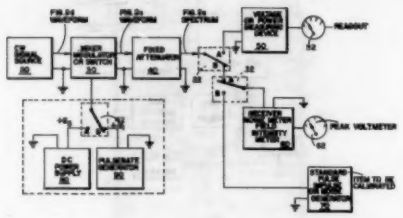


An electrical continuity and short circuit testing device adapted for checking pairs of electrical conductors each of which are insulatively oriented from each other. The device utilizes a plurality of transformers each having their primary windings electrically connected to a common power source and each of their secondary windings electrically connected to a pair of current flow indicators. These indicators are in turn each electrically connected to one of said electrical conductors. To provide various combinations for testing, at least one reversing switch is utilized, this switch electrically interconnected between the primary windings of one of the transformers and the common power source.

3,736,504
BROADBAND SPECTRAL INTENSITY MEASUREMENT SYSTEM

Frank K. Kolde, Fullerton, and Frederick R. Hume, Brea, both of Calif., assignors to North American Rockwell Corporation, El Segundo, Calif.

Filed Mar. 16, 1970, Ser. No. 19,578
Int. Cl. G01r 19/04, 19/26
U.S. Cl. 324—74 5 Claims



The invention is directed to a method and system for calibrating impulse generators and the like; a system consisting of a receiver which is tunable to a group of individual calibration frequencies and which is connectable to an impulse generator under calibration so as to provide an indication of the signal level from the impulse generator at each of the calibration frequencies. In addition, a CW signal source tunable to the same group of individual calibration frequencies has its output fed to a modulation means, which modulation means can modulate the CW signal source with either a pulse signal or with a constant level signal having a level identical to the peak level of the pulse signal and wherein means are provided for measuring the particular level of the CW signal at each of the individual calibrating frequencies after the pulsed signal is fed to the receiver and its amplitude adjusted so that the receiver provides an indication which is identical for the signal received from the impulse generator and from the pulse modulated CW signal source. The following formula is then used to compute the spectral intensity of the impulse generator:

$$S = E_{rms}\tau_o$$

Where:

S is the spectral intensity in rms volts per Hertz

E is the *rms* voltage level of the CW signal

τ_o is the pulse width of the pulse signal used to modulate the CW signal.

The above formula applies in a general case by definition. However, in a particular case when using a thin film thermoelectric or thermistor mount power measuring device, the spectral intensity of the impulse generator is determined by:

$$S = \left[\sqrt{\frac{P|Z|}{\cos\theta}}\,\tau_o\right]$$

Where:

P is the power level of the CW si signal

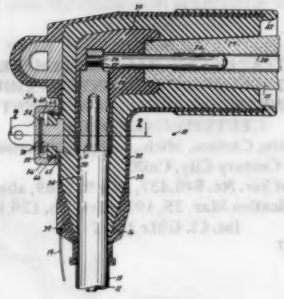
|Z| is the absolute impedance of the power measuring device

θ is the phase angle between the resistive component and the impedance Z and quite often known as the power factor.

3,736,505
ELECTRICAL CONNECTOR HAVING A VOLTAGE TEST POINT

Edward L. Sankey, New Berlin, Wis., assignor to RTE Corporation, Waukesha, Wis.

Filed Sept. 7, 1971, Ser. No. 178,352
Int. Cl. G01r 19/14; G08b 21/00
U.S. Cl. 324—133 10 Claims

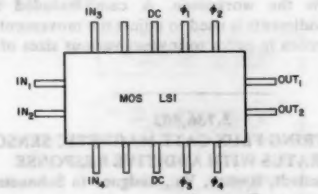


An electrical connector for terminating a high voltage cable of the type having an electrically conductive sheath, a cable insulation and an electrical conductor, the connector including an insulator surrounding the cable insulation and the conductor, an electrically conductive electrode embedded in said insulator in spaced relation to the conductor and projecting outwardly from the outer surface of said insulator, and a conductive shield covering the outer surface of the insulator and being spaced from the electrode. A conductive cap is releasably secured to said shield to enclose the outwardly extending end of the electrode and an electrically non-conductive disc is located between the inner surface of the cap and the end of the conductive electrode.

3,736,506
METHOD OF TESTING INTEGRATED CIRCUITS

Ronald G. Griffin, Costa Mesa, Calif., assignor to Collins Radio Company, Dallas, Tex.

Filed Feb. 26, 1971, Ser. No. 119,317
Int. Cl. G01r 31/26
U.S. Cl. 324—158 R 4 Claims

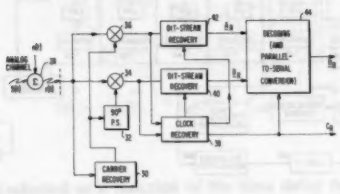


An economical method for life testing complex integrated circuit arrays including numerous internal nodes and requiring a variety of input signal combinations, including in combination with requisite clocking signals the use of one or more ramp voltages as input signals.

3,736,507
PHASE AMBIGUITY RESOLUTION FOR FOUR PHASE PSK COMMUNICATIONS SYSTEMS

Chester J. Wolejsza, Jr., and Eugene R. Cacciamani, Jr., both of Rockville, Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed Aug. 19, 1971, Ser. No. 173,191
Int. Cl. H04j 1/20
U.S. Cl. 325—30 11 Claims

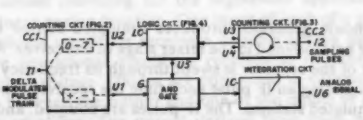


In a four phase PSK modulation/demodulation communications link phase ambiguity is resolved. At the transmitter a separate unique word modulates each of the phase quadrature components of the carrier frequency. At the receive end of the link, if the recovered carrier is locked onto the 0° phase of the received signal the two unique words will appear correctly in respective quadrature channels. However, if the recovered coherent carrier locks onto the wrong phase of the received carrier any combination of the following errors will occur: the unique words will appear in the wrong channels, the unique word in the first channel will be inverted, the unique word in the second channel will be inverted. Also the data will be garbled. The unique words, or their complements, are detected in the quadrature channels, and the channel outputs are altered, e.g., inverted or reversed, to result in the correct unique word appearing correctly at the outputs of the quadrature channels. The correction of the unique word results in an ungarbling of the data bits at the receiver.

3,736,508
MODULATOR AND DEMODULATOR RESPECTIVELY FOR USE IN ADAPTIVE DELTA MODULATION

Gunnar Erik William Sparrendahl, Handen, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 13, 1971, Ser. No. 143,108
Claims priority, application Sweden, June 5, 1970, 7824/70
Int. Cl. H04b 1/00
U.S. Cl. 325—38 B 9 Claims

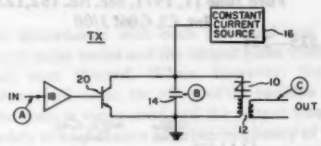


A delta modulator and delta demodulator respectively generate a synthetized analog signal by supplying to an integration circuit a signal pulse train which consists of pulses having a constant amplitude value, a polarity which is dependent on the polarity of an instantaneous pulse and a varying duration which is dependent on a previous pulse pattern in a delta modulated pulse train. The signal pulse train is generated in a circuit arrangement including a first counting circuit, a second counting circuit, a logical circuit and a gate. In the first counting circuit at each pulse in the delta modulated pulse train there is detected and registered the instantaneous pulse polarity and a digit value which defines the polarity pattern of a number of pulses in the delta modulated pulse train. The logical circuit is connected to the first counting circuit and to the second counting circuit which terminates a counting cycle during a pulse period in the delta modulated pulse train, and produces control signals whose length is dependent on the registered digit value. From the first counting circuit, through the gate which is opened during the control signals, pass signals with a constant amplitude value and a polarity which is dependent on the registered instantaneous polarity, which latter signals form the signal pulse train.

3,736,509
FREE RUNNING PULSE POSITION MODULATION SYSTEM WITH RECEIVER BLANKING

Summer T. Munn, Arkport, N.Y., assignor to Cunningham Corporation, Honeoye Falls, N.Y.

Continuation-in-part of Ser. No. 109,871, Jan. 26, 1971, abandoned. This application June 7, 1971, Ser. No. 150,315
Int. Cl. H03k 4/50
U.S. Cl. 325—143 10 Claims

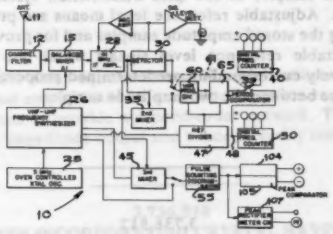


The transmitter pulse is generated by an avalanche device triggered by the voltage developed across a capacitor charged from a constant current source. The timing of transmitter pulses is varied by varying the conductance of a device which shunts the capacitor in accordance with the modulating signal being transmitted. The receiver for the system is blanked, i.e., its input is closed to incoming signals, during intervals of predetermined duration immediately following detection of each transmitted pulse, making the receiver remarkably immune to noise during the intervals between incoming system pulses.

3,736,510
FREQUENCY AND MODULATION MONITOR

Joseph C. Wu, Sunnyvale, Calif., assignor to Time and Frequency Technology, Inc., Sunnyvale, Calif.

Filed Mar. 25, 1971, Ser. No. 128,006
Int. Cl. G01r 17/00
U.S. Cl. 325—134 5 Claims



A frequency and modulation monitor for off the air monitoring of aural and visual frequencies of a transmitter in which a frequency synthesizer along with mixers provide a triple-conversion superheterodyne receiver for detecting a visual carrier frequency error, an aural carrier frequency error, and the intercarrier frequency spacing error. The signals from the output of the mixers operate digital frequency differential counters so that a digital readout indicates the errors of the respective carrier frequencies. Toward this end, the signal

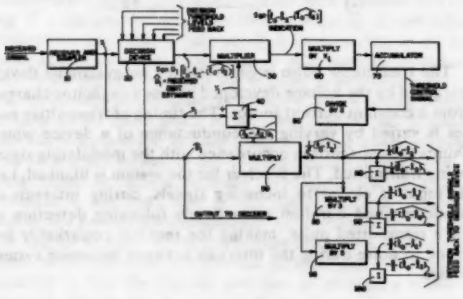
from the mixers in the form of square waves are fed to a programmed divider to reduce the frequencies thereof toward a reference frequency. The output signals from the divider are transmitted to one input of a period comparator. The other input of the period comparator receives a square wave signal of the reference frequency. The output signals of the period comparator represents the difference or error, if any, and controls the operation of gates, which in turn control the time counters to enable the time counters to receive the output signals from the mixers to produce a digital readout of the respective errors, if any.

3,736,511

AUTOMATIC DECISION THRESHOLD ADJUSTMENT

Earl D. Gibson, Huntington Beach, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed June 11, 1971, Ser. No. 152,123
Int. Cl. G06f *3/00*
U.S. Cl. 325—321 **13 Claims**



The automatic decision threshold adjuster of the present invention is comprised of a decision device which compares a sampled received data signal against a set of automatically adjusted reference levels to provide an estimate of the level of the received digit and a signal indicative of the sign of the received digit. Means are connected to the decision device to provide for learning the different in amplitude levels of the two main samples of the data transmission system impulse response. Adjustable reference level means are provided for receiving the stored amplitude samples and for providing a set of adjustable reference level signals which are adjust to respectively corresponding predetermined proportions of the difference between the two amplitude samples.

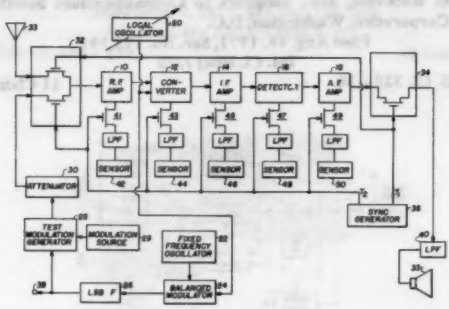
3,736,512

NON-INTERFERING ON-LINE COMMUNICATION RECEIVER TEST SYSTEM

Richard L. Gowan, Bonita, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 24, 1972, Ser. No. 228,978
Int. Cl. H04b *1/10*
U.S. Cl. 325—363 **9 Claims**

A locally generated signal of the same frequency to which a superheterodyne receiver is tuned, is injected by means of a two channel multiplexer into the front end of the receiver. The injected signal is time multiplexed with the incoming antenna signal so that the received signal, at any point in the receiver,



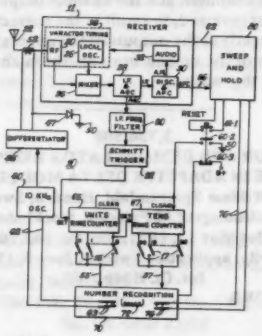
can be compared to a locally generated standard, all without interfering with the incoming signal from the antenna.

3,736,513

RECEIVER TUNING SYSTEM

Donald A. Wilson, Chicago, Ill., assignor to Warwick Electronics Inc., Chicago, Ill.

Filed June 28, 1971, Ser. No. 157,539
Int. Cl. H04b *1/16*
U.S. Cl. 325—421 **16 Claims**



A harmonic generator produces simulated station signals which are heterodyned in the mixer stage of a receiver. A local oscillator of the receiver is swept through its frequency bandwidth, producing an IF pulse each time the receiver tunes one of the simulated stations. The IF pulses are counted, and upon reaching a number preset on station selection switches, convert the sweep circuit to an AFC amplifier, maintaining the receiver tuned to a desired station frequency.

3,736,514

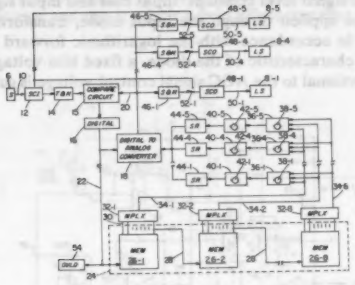
SIGNAL PROCESSING APPARATUS

Francis F. Lee, 35 Highland Avenue, Lexington, Mass.

Filed Mar. 10, 1971, Ser. No. 122,964
Int. Cl. H03k *5/00, 5/159, 19/08*
U.S. Cl. 328—55 **13 Claims**

A delay system for analog signals includes a digital-to-analog converter which is employed during a first portion of each cycle to convert an analog sample to binary form and during a second portion of each cycle to convert delayed binary signals to analog form. The binary signals are applied to

dynamic storage through which the data is moved at a predetermined rate, and data is extracted from a particular



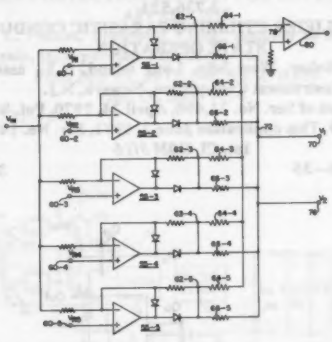
output (selected as a function of the time delay desired) for application to the digital-to-analog converter for reconversion to analog form.

3,736,515

NON-LINEAR FUNCTION GENERATOR

Don G. Kadron, Pasadena; Wallace J. Hoff, and Robert L. Parks, both of Ellicott City, all of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1971, Ser. No. 114,530
Int. Cl. G06g 7/12
U.S. Cl. 328—143 4 Claims



A circuit providing for the segmented approximation of non-linear analog function. One input of each of a plurality of operational amplifiers receive a variable analog signal. Each of the operational amplifiers receives at its other input a reference voltage. Diodes are connected in various feedback paths between the output and one of the inputs of the operational amplifier. The output derived from each operational amplifier will depend upon the relationship between the variable input voltage and the reference voltage and how they combine to affect the diodes.

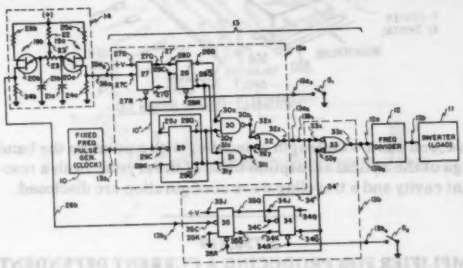
3,736,516

VARIABLE FREQUENCY PULSE GENERATING CIRCUIT

Charles W. Ellis, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed June 14, 1971, Ser. No. 152,642
Int. Cl. H03k 5/20
U.S. Cl. 328—134 5 Claims

A circuit for providing an output pulse train which has a variable frequency when the circuit operates in a first mode and for providing an output pulse train which has a fixed, precise frequency when the circuit operates in a second mode. A fixed frequency pulse generator applies a pulse train having a fixed frequency to one input of a pulse frequency modifying circuit. A variable frequency pulse generator applies a pulse train having a variable frequency to another input of the pulse frequency modifying circuit. When the latter circuit operates in its first mode, the state of the voltage at the circuit output is



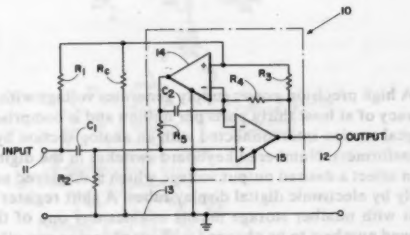
controlled in accordance with both the fixed and variable frequency input pulse trains and the output pulse train reflects the algebraic sum thereof. When, however, the circuit operates in its second mode, the effect of the variable frequency input pulse train is suppressed and the output frequency is controlled solely in accordance with the frequency of the fixed frequency pulse generator.

3,736,517

ACTIVE DELAY-EQUALIZER NETWORK

Jin Twan Lim, Kanata, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Feb. 4, 1972, Ser. No. 223,606
Int. Cl. H03h 11/00
U.S. Cl. 328—167 5 Claims



An active delay-equalizer network which utilizes only two operational amplifiers and a number of resistive or capacitive components to provide a second-order network. The circuit has a low impedance output and hence is readily connected in tandem.

3,736,518

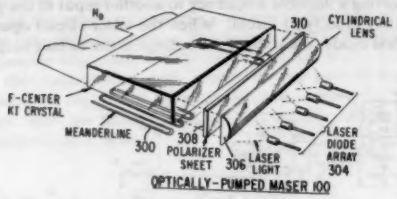
MASER INCORPORATING CRYSTAL HAVING F-CENTERS

Charles Hammond Anderson, Oxford, England; Bernard Robert Feingold, Waltham, Mass., and Edward Stephen Sabisky, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 22, 1971, Ser. No. 200,715
Int. Cl. H01s 1/02
U.S. Cl. 330—4 19 Claims

A maser incorporating a crystal having F-centers. The crystal, which may be an alkali halide such as KI, exhibits

dichroism and may be pumped by selective absorption with circularly polarized light energy. The light energy is preferably derived from a diode laser, such as gallium aluminum arsenide, and has a wavelength coinciding with a point on the band edge of the optical absorption band of the crystal. Both a resonant cavity and a traveling wave configuration are disclosed.



3,736,519

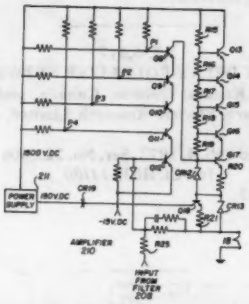
AMPLIFIER FOR PRODUCING A CURRENT DEPENDENT ON THE OUTPUT VOLTAGE

Robert C. Smyth, Huntington Beach, N.Y., assignor to Digital Apparatus Corporation, Deer Park, N.Y.

Continuation of Ser. No. 23,301, March 27, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 217,986

Int. Cl. H03f 3/42; H03g 3/30

U.S. Cl. 330—18 **5 Claims**



A high precision power supply generates voltage with an accuracy of at least thirty parts per million and is comprised of a digital section interconnected with an analog section by pulse transformers. Numbered keyboard switches in the digital section select a desired output voltage which is displayed numerically by electronic digital display tubes. A shift register in circuit with number storage means enables any one of the displayed numbers to be changed without changing any other displayed number. The analog section includes a stable reference voltage generator, electronic switch, filter and a high gain amplifier which produces an output voltage corresponding to the displayed numbers. The electronic switch passes proportional parts of the reference voltage to the amplifier via the filter under control of pulses received from the digital section. The amplifier is capable of producing current in one of the two ranges depending upon the output voltage.

3,736,520

PRECISION VARIABLE GAIN AMPLIFIER WITH LINEAR LOG-GAIN VERSUS CONTROL-VOLTAGE CHARACTERISTIC

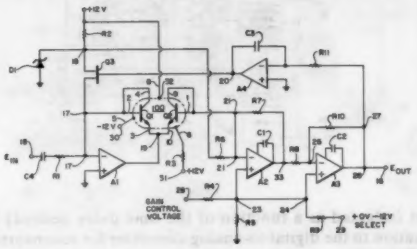
William F. Acker, Seminole, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 23, 1971, Ser. No. 201,459

Int. Cl. H03g 3/30

U.S. Cl. 330—29 **20 Claims**

A precision variable gain amplifier with linear log-gain versus control-voltage characteristic having an automatically adjusted input diode bias current proportional to the nominal input signal level. A fixed bias current is supplied to the output diode where the AGC (automatic gain control) keeps the nominal signal level constant. Input bias and input signal currents are applied through the input diode, transformed to a voltage in accordance with the logarithmic forward current-voltage characteristic of the diode, a fixed bias voltage which is proportional to the AGC signal control-voltage is subtracted



from the logarithmic diode voltage and this differential voltage is applied across the output diode, the antilogarithmic voltage-current characteristic of the diode transforms this voltage into a current linearly proportional to the bias and signal currents in the input diode, this current is converted to a voltage which appears at the output of the variable gain amplifier, the output signal is applied to an integrator which adjusts the bias current through the input diode in such a manner as to drive the d-c bias of the output signal toward zero.

3,736,521

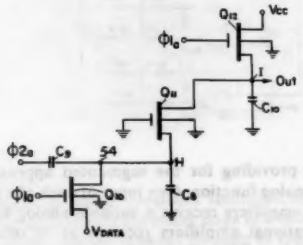
MOS AMPLIFIER UTILIZING PARASITIC CONDUCTION STATE OPERATION

Lamar T. Baker, West Islip, Long Island, N.Y., assignor to General Instrument Corporation, Newark, N.J.

Division of Ser. No. 31,490, April 24, 1970, Pat. No. 3,656,119. This application June 2, 1971, Ser. No. 149,332

Int. Cl. H03f 3/16

U.S. Cl. 330—35 **3 Claims**



An amplifier suitable for use in an MOS-type memory array in which practical use is made of the usually undesirable parasitic PNP transistor action of an MOS circuit.

3,736,522

HIGH GAIN FIELD EFFECT TRANSISTOR AMPLIFIER USING FIELD EFFECT TRANSISTOR CIRCUIT AS CURRENT SOURCE LOAD

Clarence W. Padgett, Huntington Beach, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

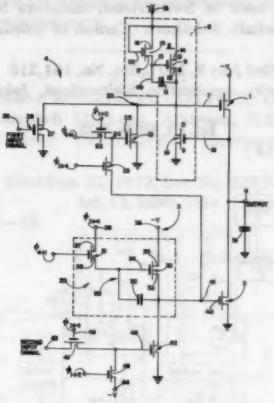
Filed June 7, 1971, Ser. No. 150,492

Int. Cl. H03f 3/16

U.S. Cl. 330—35 **3 Claims**

The amplifier drives one half of a push-pull output stage and receives voltage changes fedback from the output to regulate

the output voltage. The amplifier has a current source in electrical series with a regulating field effect transistor which is controlled by the output feedback. The push-pull output stage is driven by a voltage level at a common point between the current source and the regulating field effect transitor. Due to



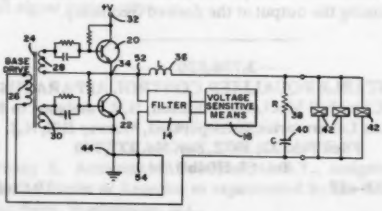
the high gain characteristics of the amplifier, the voltage changes at the common point are large relative to the voltage changes on the gate electrode of the regulating field effect transistor. As a result, relatively small output changes are quickly corrected by changing the drive voltage for the field effect transistor push-pull circuit.

3,736,523

FAILURE DETECTION CIRCUIT FOR ULTRASONIC APPARATUS

William L. Puskas, Trumbull, Conn., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed July 31, 1972, Ser. No. 276,559
Int. Cl. H01v 7/00
U.S. Cl. 331—64 **10 Claims**



A failure detection circuit for a power oscillator driven by a set of transistors which are switched to provide a square wave drive voltage to the oscillator comprises a narrow band pass filter and a voltage sensitive means. The band pass filter is coupled for receiving the square wave voltage and permits the passage of a predetermined odd-harmonic signal to the voltage sensitive means. The amplitude appearing at the voltage sensitive means, such as a lamp, is indicative of the operation of the oscillator.

3,736,524

LASER MEDIA CONTAINING FLUORINATED ALCHOLS

Karl H. Drexhage, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1971, Ser. No. 149,055
Int. Cl. H01s 3/20
U.S. Cl. 331—94.5 **9 Claims**

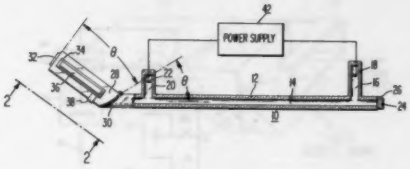
Certain fluorinated alcohols are useful as solvents for fluorescing dyes in the formation of lasing media.

3,736,525

UNITIZED INTERNALLY MODULATED GAS LASER

Donald Jones Channin, and Jacob Meyer Hammer, both of Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 6, 1971, Ser. No. 204,812
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 **11 Claims**



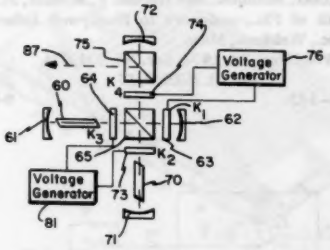
A unitized, integral, acousto-optic, internally modulated gas laser, which may be mass-produced as a single article of manufacture.

3,736,526

METHOD OF AND APPARATUS FOR GENERATING ULTRA-SHORT TIME-DURATION LASER PULSES

William W. Simmons, Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 143,515, May 14, 1971, Pat. No. 3,701,956. This application Aug. 7, 1972, Ser. No. 278,373
Int. Cl. H01s 3/11
U.S. Cl. 331—94.5 **3 Claims**

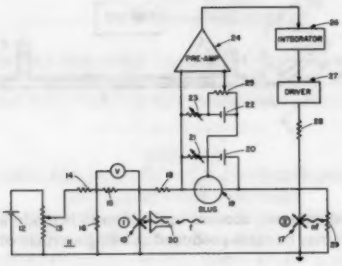


Both a method and an apparatus are disclosed for generating laser pulses having a time duration on the order of subnanoseconds. These light pulses also have a high output power. They are generated by causing a laser to lase and removing the bulk of the radiation contained in the laser cavity. The remaining radiation or light extends over only a short length of the cavity. This light pulse is mode locked, that is it consists of individual Fourier components of the proper phase so that the short light pulse retains its shape while being amplified again in the laser cavity. This short-duration light pulse may then be made to issue from the cavity. Alternatively, the amplified light may be made to issue as a pulse train or set of pulses. Finally, a single pulse may be utilized for mode locking another laser where the ultra-short time-duration pulse may be amplified again. This may be considered priming and subsequent mode locking of the second laser.

3,736,527
PRECISION VOLTAGE BIAS FOR JOSEPHSON OSCILLATORS

Andrew Longacre, Jr., Rochester, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 21, 1972, Ser. No. 291,125
Int. Cl. H03b 3/04
U.S. Cl. 331—107 S 6 Claims

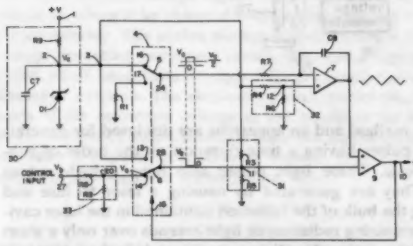


A Josephson junction irradiated with signal energy of frequency *f* and current biased to a particular radio frequency induced step in its I-V characteristic is employed as a voltage standard to precisely voltage bias a second Josephson junction so as to have its AC oscillations occur at a selected harmonic of said frequency *f*. A SLUG is utilized in the control circuit which automatically equalizes the voltages across these junctions.

3,736,528
VOLTAGE CONTROLLED OSCILLATOR

William F. Acker, Seminole, and Gordon F. Bremer, St. Petersburg, both of Fla., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 24, 1971, Ser. No. 201,674
Int. Cl. H03k 3/15
U.S. Cl. 331—143 9 Claims

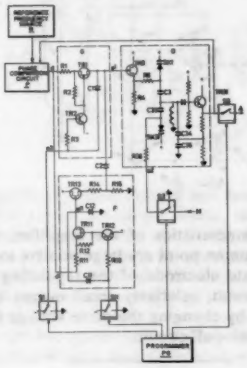


A voltage controlled oscillator having a wide tuning range and being stable in frequency and phase as a function of temperature and/or time. The threshold voltage of a comparator is periodically varied abruptly to produce oscillations. The frequency of oscillations is electrically varied by varying the period between the threshold voltage changes.

3,736,529
ELECTRICAL CIRCUIT FOR GENERATING PRECISE HIGH FREQUENCY OSCILLATION INTERMITTENTLY MODULATABLE IN FREQUENCY

Hans O. van der Floe, Selzach, and Johann Christian Friedil Langendorf, both of Switzerland, assignors to Autophon Aktiengesellschaft, Solothurn (Canton of Soleure), Switzerland

Filed July 9, 1971, Ser. No. 161,210
Claims priority, application Switzerland, July 10, 1970, 10456/70
Int. Cl. H03c 3/08
U.S. Cl. 332—18 2 Claims

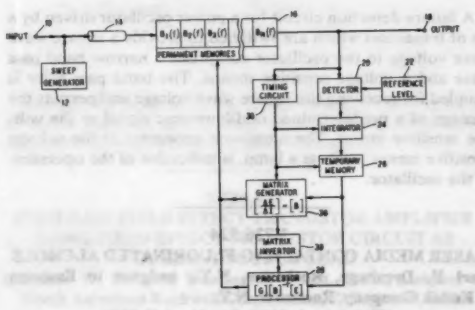


An electrical circuit arrangement for generating a high frequency oscillation of high frequency precision intermittently modulatable in its frequency so that a frequency modulated signal can be periodically delivered. A high frequency semi-conductor oscillator receives two voltage inputs for controlling the output of the same, one of the inputs being of a predetermined modulated value, with the other input being a function of a correction signal derived by comparing the output of the oscillator with a predetermined unmodulated signal for maintaining the output at the desired frequency.

3,736,530
ADJUSTABLE EQUALIZER CONTROL APPARATUS

Roderick Campbell MacLean, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1972, Ser. No. 227,740
Int. Cl. H04b 3/04
U.S. Cl. 333—18 19 Claims



In apparatus for controlling the several sections of an adjustable bump equalizer in a transmission system, the effectiveness of each equalizer section is determined directly each

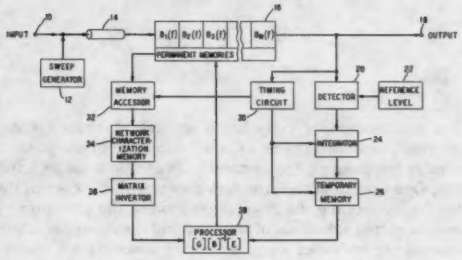
time the equalizer is to be adjusted by measuring the sensitivity of the equalizer frequency response to a small change in the control signal for each section. This sensitivity information is used in the processing of other signal information indicative of the misalignment of the transmission system to produce signals suitable for adjusting the equalizer to reduce transmission system misalignment.

3,736,531

ADJUSTABLE EQUALIZER CONTROL APPARATUS

Roderick Campbell MacLean, Atkinson, N.H., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1972, Ser. No. 227,741
Int. Cl. H04b 3/04
U.S. Cl. 333—18 12 Claims



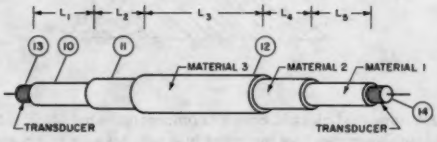
In apparatus for controlling the several sections of an adjustable bump equalizer by solving a set of simultaneous equations relating equalizer misalignment to the effectiveness of each equalizer section, signal information descriptive of the effectiveness of each equalizer section as a function of the setting of that section is stored in a memory. When the equalizer is to be adjusted, this information is accessed on the basis of the present settings of the equalizer sections and the information thus retrieved is used in the processing of misalignment signal information.

3,736,532

ULTRASONIC DELAY LINES

Anthony E. Armenakas, Beachhurst, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 14, 1971, Ser. No. 162,583
Int. Cl. H03h 9/30
U.S. Cl. 333—30 R 3 Claims



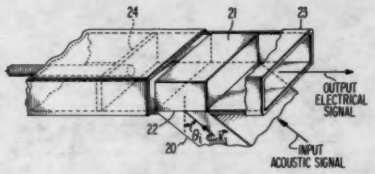
Delay lines with a variety of delay versus frequency characteristics are obtained by fabricating the delay line apparatus from multilayer materials. In one modification, the delay line is of rod construction and in another, of strip design.

3,736,533

APPARATUS FOR EFFICIENTLY CONVERTING ACOUSTIC ENERGY INTO ELECTRICAL ENERGY

Gerard Argant Alphonse, Highstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,344
Int. Cl. H03h 7/30
U.S. Cl. 333—30 7 Claims



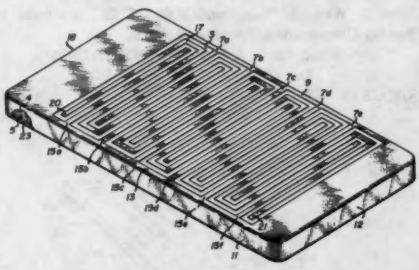
An acoustic signal propagated in an acoustic medium having an interface with a piezoelectric transucer is efficiently converted by the transducer into electrical signal energy by the establishment of an evanescent electrical field within the piezoelectric transducer.

3,736,534

PLANAR-SHIELDED MEANDER SLOW-WAVE STRUCTURE

Edwin George Chaffee, Redwood City, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Filed Oct. 13, 1971, Ser. No. 188,893
Int. Cl. H03h 7/30
U.S. Cl. 333—31 R 8 Claims

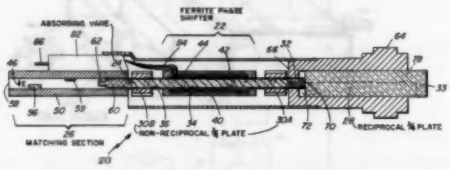


A novel slow wave structure capable of ultrabroadband operation includes a meander line of a predetermined length on a layer of insulative material, a first series of spaced metal fingers forming a comb line are attached to the layer and extend in parallel from a front edge of the layer into the facing concave portions of the meander line and a second series of spaced metal fingers forming a comb line are attached to the layer and extend in parallel into the concave portions of the meander line from the opposed back edge of the layer. A metal layer or ground plane is connected to the underside of the layer and both series of metal projecting fingers are placed electrically in common together with the bottom ground plane. In a preferred method of manufacturing of the invention the insulative layer is completely coated or covered with metal on all surfaces and using a photoresist etching process the insulative spaces between the meander lines and the fingers are etched out leaving the desired structure.

3,736,535
PHASE SHIFTING SYSTEM USEABLE IN PHASED ARRAY FOR DISCRIMINATING RADAR ECHOES FROM RAINDROPS

Max C. Mohr, Chelmsford; Leo Malancon, Dover, and Stephen R. Monaghan, Harvard, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 1, 1972, Ser. No. 249,125
Int. Cl. H01p 1/18
U.S. Cl. 333—31 A 14 Claims

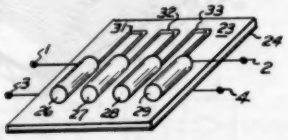


An array of phase shifting elements each of which is suitable for forming a microwave lens in a radar tracking system and for attenuating radar echoes from raindrops. Each phase shifting element comprises a ferrite rod enclosed by a metallic overlay for providing phase shift in a circular polarization mode, current carrying windings for impressing a magnetic field within the ferrite rod, a pair of nonreciprocal quarter wave plates biased by permanent magnets and located at the ends of the ferrite rod, a vane adjacent the back end of the ferrite rod for absorbing radiant energy having a polarization associated with rainfall reflections, an impedance matching section at the back end of the phase shifting element and a quarter wave plate at the front end of the phase shifting element. Means are also disclosed for focussing the array of phase shifters for airport surveillance.

3,736,536
MICROWAVE FILTER

Robert J. Wenzel, Woodland Hills, Calif., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 14, 1971, Ser. No. 133,926
Int. Cl. H03h 7/04; H01p 3/08
U.S. Cl. 333—73 R 18 Claims

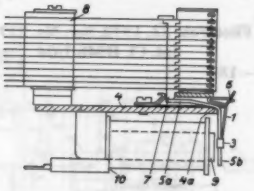


The inventive microwave filter is based upon the utilization of a prototype filter of known type, and a recognition of the properties of microwave C-sections, and parallel coupled line capacitance arrays. A prior art filter is chosen as a prototype filter and is partitioned into a general equivalent circuit derived by applying electrical constraints to the standard equivalent circuits for microwave C-sections and parallel coupled line capacitance arrays. A set of general equations is then written for the equivalent circuit, and by using the equations it is possible to design filters having a wide range of desired filter characteristics simply by substituting the values from the prototype filter into the equations. It is therefore possible to construct a wide variety of filters from a few standard parts. Strip line filters can also be made utilizing the general equations.

3,736,537
ARMATURE ASSEMBLY FOR AN ELECTROMAGNETIC RELAY

Kurt Arne Dietsch, Farsta, and Petrus Franciscus Philippus Van Opdorp, Johanneshov, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 38,157, May 18, 1970, abandoned. This application Jan. 31, 1972, Ser. No. 222,217
Int. Cl. H01h 50/58
U.S. Cl. 335—135 3 Claims

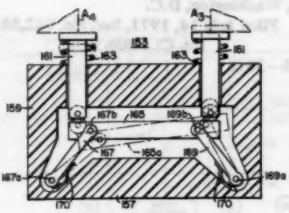


An electromagnetic relay has a generally L-shaped armature which rests at its bend on a bearing edge of the yoke of the relay for pivoting the armature about said edge as a fulcrum. One branch of the armature coacts with the core of the relay for controlling the angular position of the armature by the state of magnetization of the core and the other branch of the armature underlies a contact spring assembly for control of the same by the angular position of the armature. A generally V-shaped leaf spring extends between the armature and the spring assembly. One leg of this spring is secured to the branch of the armature coacting with the core and the other leg has a nose which is hooked on a clamping member fixedly secured to the yoke of the relay. As a result, the spring holds the armature in its position on the bearing edge. Detachment of the armature together with the spring is effected by simply unhooking the nose of the spring from the clamping member.

3,736,538
ELECTRIC CONTROL DEVICES WITH MECHANICAL INTERLOCK

Edward A. Owen, Oakmont, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 28, 1972, Ser. No. 238,952
Int. Cl. H01h 9/26
U.S. Cl. 335—160 10 Claims



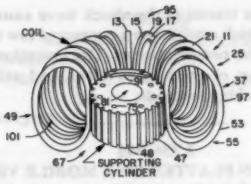
An improved electric control combination characterized by two similar contactors mounted in a side-by-side relationship with a mechanical interlock interposed therebetween which interlock limits the contactors to alternate operation. The interlock includes a cross beam and a pair of links, the links being pivotally mounted on the cross beam and the cross beam being reciprocally moveable between first and second positions.

3,736,539

MOMENT-FREE TOROIDAL MAGNET DESIGN

Joseph File, Trenton; Robert G. Mills, Princeton; George V. Sheffield, Hopewell, and Peter Bonanos, E. Brunswick, all of N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 18, 1972, Ser. No. 245,147
Int. Cl. H01f 7/22
U.S. Cl. 335—216 6 Claims



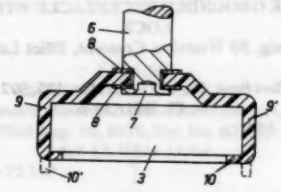
Apparatus for confining a high temperature plasma column having a large cross-section in a strong magnetic field for increasing the plasma confinement time. The apparatus, comprises a large superconducting moment-free toridal magnet having coil strands in pure-tension that are self-supported on an inner cylindrical member. In one embodiment, two examples are given for a DT reactor and a catalyzed DD fusion reactor.

3,736,540

MOUNTING OF AN ARMATURE PLATE IN A THERMOELECTRIC PILOT SAFETY DEVICE

Dieter Westphal, Huckeswagen, Germany, assignor to Voh. Vaillant KB, Remscheid, Germany

Filed Mar. 31, 1971, Ser. No. 115,680
Claims priority, application Austria, Apr. 2, 1970, A/3026
Int. Cl. H01f 7/08
U.S. Cl. 335—279 9 Claims



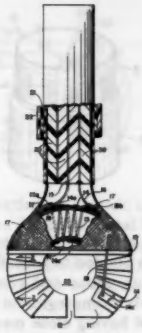
A thermoelectric pilot safety apparatus includes an electromagnet and a plate shaped armature having one face adjacent the electromagnet. Extending in the direction away from the other face is a stem which connects to a valve closure. A disk is secured to the plate end of the stem. A ring connects the plate and the disk. In one embodiment the disk and ring are integral and formed of a thermoplastic with the edge of the ring at the one face turned over the plate by hot working after assembly. In another embodiment the ring is thermoplastic and it is the edge at the disc that is turned over into engagement by hot working. The stem may be integral with the disk or be of a thermoplastic material which is beaded out by hot working to provide the connection between the two.

3,736,541

DETECTOR PROBE FOR MAPPING DISCONTINUITIES IN ELECTROMAGNETIC PATHS

Reginald J. Gould, Riverside, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Feb. 28, 1972, Ser. No. 229,801
Int. Cl. H01f 15/04, 17/06
U.S. Cl. 336—84 6 Claims



An electromagnetic field probe shielded to render the probe non-sensitive to ambient electromagnetic fields. The probe consists of an electromagnetic circuit which includes a ferrite core, an air gap, and a pickup coil surrounding a portion of the ferrite core. The pickup coil and a major portion of the core is electromagnetically shielded by an overlapping wrapping of insulated copper material shielding the circuit everywhere except in the vicinity of the air gap

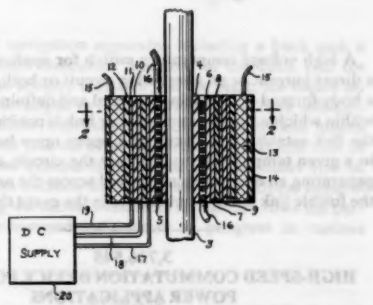
The invention herein described was made in the course of or under a contract or sub-contract thereunder, with the Department of the Air Force.

3,736,542

HIGH VOLTAGE TRANSFORMER

Harry Ashe, 1040 Euclid St., Santa Monica, Calif.

Filed June 15, 1971, Ser. No. 153,310
Int. Cl. H01f 15/00
U.S. Cl. 336—70 1 Claim



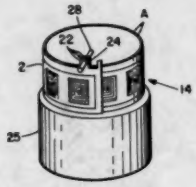
A high voltage transformer whose primary and secondary windings are separated by a lamination of solid insulation and conductive sheets alternately arranged. The conductive sheets are charged with discrete direct current voltages to provide a predetermined voltage gradient across the composite insulator structure. In a preferred embodiment the insulating components and the conductive components are in the form of concentric cylinders.

3,736,543

PHOTOETCHED INDUCTION COIL ASSEMBLY

Ernest E. Lademann, Park Ridge, and James J. O'Connor, Old Bridge, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Mar. 31, 1972, Ser. No. 240,081
Int. Cl. H01f 27/30
U.S. Cl. 336—200 5 Claims



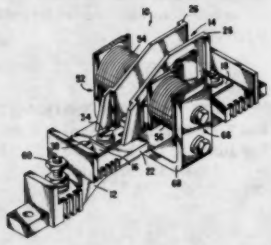
An induction coil assembly includes circuits photoetched on metallic laminates bonded to a flexible substrate. The substrate is wound on an arbor and pinned, after which it is removed from the arbor, impregnated and machined to provide an induction coil having close mechanical and electrical tolerances.

3,736,544

HIGH VOLTAGE TEMPERATURE SWITCH

Chester H. Fluder, Wheeling, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed July 16, 1971, Ser. No. 163,197
Int. Cl. H01h 85/38
U.S. Cl. 337—282 3 Claims



A high voltage temperature switch for application in either a direct current or an alternating circuit or both and including a body formed of insulating material and defining an arc chute within which a fusible conductor or link is positioned, wherein the link establishes a circuit and opens upon being subjected to a given temperature to interrupt the circuit, and means for generating an electromagnetic field across the arc chute about the fusible link to blow out the arc in the event the link opens.

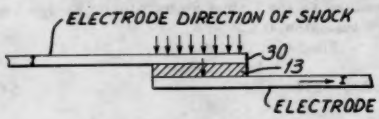
3,736,545

HIGH-SPEED COMMUTATION DEVICE FOR HEAVY POWER APPLICATIONS

Joseph-Paul-Marie Refouvelet, 65-Tarbes, and Joseph Jean Francois Pontico, 65-Hautes-Pyrenees, both of France, assignors to ETAT Francais Paris, France

Filed Aug. 6, 1970, Ser. No. 61,601
Claims priority, application France, Aug. 27, 1969, 6929291
Int. Cl. H01c 7/00
U.S. Cl. 338—13 10 Claims

A high-speed commutation device using the effect of the fall of resistivity in pressure responsive materials under the action of very high pressures. Pressure is obtained in the form of a pressure wave generated by the detonation of an explosive excited by an electric detonator. The core of insulating material is located between two electrodes under the explosive charge and the transit of the shock wave causes a heavy fall of resistivity which establishes a contact of low residual resistance between the two electrodes. The invention is applied to the construction of starting switches and other similar devices and to switching methods.



3,736,546

ILLUMINATION PLATTER ON A MOBILE VEHICLE

Jack D. Jones, 11508 N. Victoria, Oklahoma City, Okla.

Division of Ser. No. 782,640, Dec. 10, 1968, Pat. No. 3,582,210. This application May 3, 1971, Ser. No. 141,047
Int. Cl. H01c 7/08
U.S. Cl. 338—15 3 Claims

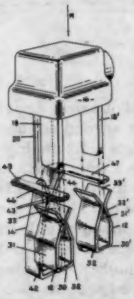
An illumination plotter for plotting illumination characteristics of thoroughfare lighting systems including a vehicle, an adjustable length, horizontally extending, supporting bar mounted on the top of said vehicle, and a pair of light intensity sensing devices mounted on opposite ends of the supporting bar. The sensing devices are connected to an amplifier carried in the vehicle, and the amplifier is connected to a recording system. The sensing devices each have convex, upwardly facing light sensitive surfaces to obtain maximum exposure to light emanating from above.

3,736,547

THREE WIRE GROUNDED RECEPTACLE WITH SAFETY LOCK

Gerhard Koenig, 58 Westview Crescent, Elliot Lake, Ontario, Canada

Filed Sept. 22, 1971, Ser. No. 182,592
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 10 Claims



A grounded receptacle to receive a conventional plug with two live sockets to receive the two live prongs of the plug and

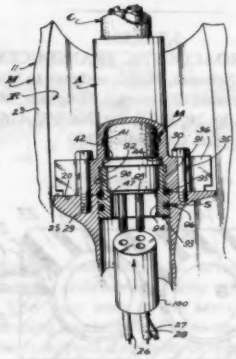
a grounded socket to receive the ground prong of the plug. Previous grounded receptacles of this type had the disadvantage that they were as equally suited to be used with plugs without a ground prong as with plugs with a ground prong. The grounded socket of this receptacle has at least one blocking plate which normally extends to a position blocking insertion of one of the live prongs of the plug into the corresponding live sockets of the receptacle, but which is resiliently displaced by insertion of a ground prong into the grounded socket to a position in which such insertion of the live prong is permitted.

3,736,548

ELECTRICAL COUPLER

Richard L. Double, Long Beach, Calif.

Filed July 28, 1971, Ser. No. 166,701
Int. Cl. H01r *13/52*
U.S. Cl. 339—31 R **8 Claims**



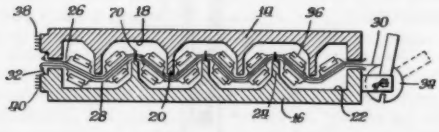
An electrical connector structure establishing bonded and sealed engagement with the lower end of an elongated submersible electric power conducting cable and engageable with submersible, electric oil well pumps, said connector being engageable with different makes of oil well pumps having distinct power cable connecting means parts and/or portions.

3,736,549

ELECTRICAL CONNECTOR

John W. Clements, Route 3 Indian Hill Woods, Naperville, Ill.

Filed Aug. 10, 1970, Ser. No. 62,453
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 MP **1 Claim**



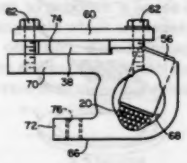
Apparatus for connecting flexible flat conductored cables each to the other and for connecting the conductors of a cable selectively to the conductors of a multi-layered cable at particular points along the conductors.

3,736,550

CONNECTING ADAPTER FOR ELECTRIC CABLE AND FUSE

James B. Wallace, Beaver, and Robert H. Hill, Beaver Falls, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1972, Ser. No. 228,133
Int. Cl. H01r *7/26*
U.S. Cl. 339—265 F **10 Claims**



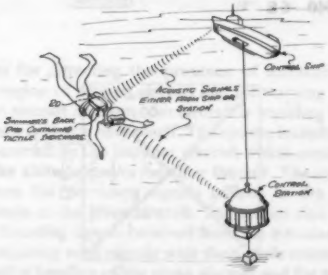
An adapter for connecting an electric cable to a blade-type fuse characteristic by an extruded metal body having at least one cable-receiving aperture with a set screw threadedly seated in the body and movable into the aperture, and a pressure bar for clamping the blade of a fuse in a tight-fitting surface-to-surface contact with the body.

3,736,551

SWIMMERS TACTILE COMMAND NAVIGATION APPARATUS

Joseph Hirsch, Santa Ana, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 16, 1970, Ser. No. 89,921
Int. Cl. H04b *11/00*
U.S. Cl. 340—5 R **8 Claims**



A command navigation apparatus including a back pad; a plurality of tactile indicators mounted in the back pad for providing tactile sensory indicators on the back, the tactile indicators being arranged in a pair of rows which are substantially perpendicular with respect to one another; and means for mounting the pad on a person's back so that one row of tactile indicators extends longitudinal and the other row of tactile indicators extends transverse the back. Upon sequentially energizing the tactile indicators in selected rows the person receives command indications to progress in various directions.

3,736,552

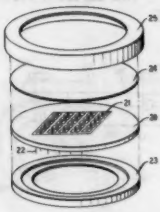
ACOUSTIC IMAGING DEVICE USING MULTIPLE ELEMENT ELECTRET TRANSDUCER

Gerhard Martin Sessler, Summit, N.J., and Kenneth James Taylor, Doubleview, Australia, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 27, 1971, Ser. No. 166,366
Int. Cl. G01s *9/66*
U.S. Cl. 340—5 MP **13 Claims**

In an acoustic imaging system, the shape of an object may be reconstructed by directing sound energy on the object and

sensing the sound field scattered by it. An improved sensing unit, which exhibits high resolution, large aperture and good sensitivity and which is sufficiently robust to be used as a field instrument, utilizes a large area, divided-backplate foil



electret transducer. Each backplate unit, with its share of the overlying foil electret, constitutes an individual transducer element. The resulting array is capable of real time operation, responds to relatively small acoustic energy densities, and is suitable for operation in either a gaseous or liquid medium.

3,736,553

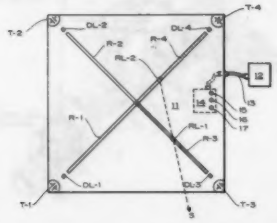
SOUND ORIGIN DIRECTION FINDER

David Winston Kermode, P. O. Box 126, Ridgecrest, Calif.

Filed Dec. 3, 1971, Ser. No. 204,573

Int. Cl. G01s *3/00*

U.S. Cl. 340—6 S **3 Claims**



A sound origin direction indicator comprising a flat square-shaped form having four sound transducer/amplifier units mounted at its four corners, four rows of solid state lamps radiating from its center to the corners and an electronics system attached to the transducers and lamps to operate the device.

3,736,554

SEISMIC EXPLORATION

Maurice Barbier, Ousse, France, assignor to Societe Anonyme dite: Societe Nationale Des Petroles D'Aquitaine, County of Courbevoie, France

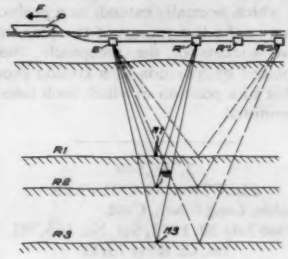
Filed June 19, 1969, Ser. No. 834,813

Claims priority, application France, June 27, 1968, 68156787

Int. Cl. G01v *1/38*

U.S. Cl. 340—7 R **5 Claims**

Seismic exploration is effected using a seismic transmitter and at least one receiver which are moved in a continuous manner at a constant distance apart while the transmitter transmits a continuous series of long signals and the received signals are recorded without interruption. The transmitted



signals are then correlated with corresponding parts of recorded signals to obtain seismic information.

3,736,555

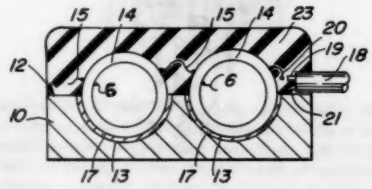
ELECTROACOUSTIC TRANSDUCERS

Gilbert C. Barrow, Scituate, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Filed Aug. 20, 1971, Ser. No. 173,476

Int. Cl. H04b *13/00*

U.S. Cl. 340—8 **9 Claims**



A rugged low-cost transducer is used in a multiple array to provide greater power with a more precise sound pattern. The transducers are cylindrical elements which are partially recessed in a rigid baffle plate or housing structure. The only radiation takes place from the exposed parts of the cylindrical transducer shell.

3,736,556

METHOD AND APPARATUS FOR INCREASING SEISMIC SIGNAL-TO-NOISE RATIO

Frederick J. Barr, Jr., San Antonio, Tex., assignor to Petty Geophysical Engineering Company, San Antonio, Tex.

Filed Sept. 8, 1971, Ser. No. 178,654

Int. Cl. G01v *1/24*

U.S. Cl. 340—15.5 EC **18 Claims**

An improved technique for enhancing the signal-to-noise ratio in the automatic processing of seismic data is provided according to the present invention. Signals from horizontally and vertically oriented geophones, representing two functions of time, are separately recorded. The product of these two

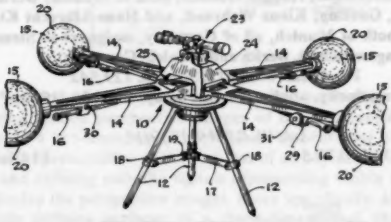
signals is formed as a signal representative of a third function of time. The product signal thus formed is then used in various ways as an "enhancement function" signal, to attenuate noise components and enhance seismic signal components. One technique for utilizing the enhancement function signal involves half-wave rectifying the enhancement function signal and then multiplying the rectified signal by the original signal from the vertically oriented geophone. Another technique involves using the enhancement function signal to produce a gating signal to cancel the original output signal from the vertically oriented geophone whenever the enhancement function signal is other than negative.

3,736,557

ACOUSTIC LOCATOR WITH ARRAY OF MICROPHONES

George Brynk, Raton, N. Mex., assignor to A.R.F. Products, Incorporated, Raton, N. Mex.

Filed Nov. 26, 1969, Ser. No. 880,026
Int. Cl. G01s *3/00*
U.S. Cl. 340—16 R 7 Claims



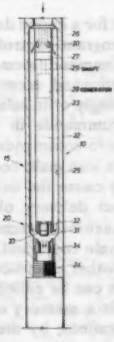
Acoustic locator comprising an array of microphones located on the outer ends of radial arms extending from a central support. The inner ends of the arms are pivotally connected to a housing rotatably mounted on a table of the support which also comprises a plurality of legs. A sighting device is applied to the arms for orienting the microphones, once the support is set up. After orientation, longitudinally adjustable posts are swung downwardly from the arms into engagement with the ground for supporting the arms and microphones.

3,736,558

DATA-SIGNALING APPARATUS FOR WELL DRILLING TOOLS

Walter E. Cubberly, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed July 30, 1970, Ser. No. 59,393
Int. Cl. G01v *1/14*
U.S. Cl. 340—18 LD 19 Claims



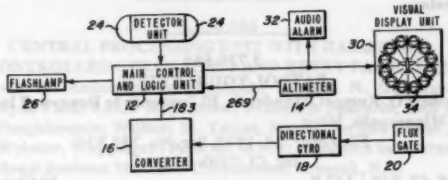
In the preferred embodiment of the invention disclosed herein, a well tool having new and improved data-signaling apparatus and carrying a drill bit on its lower end is dependently coupled from a drill string and lowered into a borehole being excavated. During the drilling operation, measurements are successively made of selected borehole conditions, formation properties, or the like, which are converted by the data-signaling apparatus into coded electrical signals for repetitively opening and closing a valve including a valve member and a movable valve seat operatively arranged on the tool for selectively interrupting and then resuming the flow of the drilling fluid being circulated through the drill string. In this manner, the valve functions to produce a series of encoded pressure pulses in the drilling fluid which are representative of the measurements being obtained. These pressure pulses are transmitted through the drilling fluid to the surface where they are sensed and converted into meaningful indications of the measurements.

3,736,559

PILOT WARNING INDICATOR SYSTEM

James H. Trageser, and Joseph A. Call, both of Dayton, Ohio, assignors to Technology Incorporated, Dayton, Ohio

Filed June 19, 1970, Ser. No. 47,823
Int. Cl. G08g *5/00*
U.S. Cl. 340—27 R 21 Claims



A system for detecting the presence of intruder aircraft within the region of a given aircraft and for warning the pilot of the given aircraft if an intruder aircraft is traveling in such a manner that a collision may result. The system includes signaling means carried by the intruder aircraft which continuously indicates the altitude and/or heading thereof. The system includes means for providing signals related to the heading and/or altitude of the given aircraft. The system also includes means for decoding signals received from the intruder aircraft and for comparing such signals with the signals related to the altitude and/or heading of the given aircraft and for providing a warning if a potential collision condition exists.

3,736,560

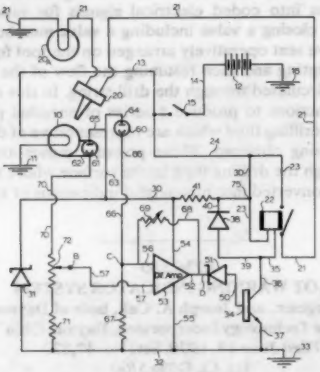
APPARATUS FOR DETECTING AND SIGNALING LIGHT ATTENUATION

Atlee S. Hart, 27530 Abington Road, Southfield, Mich.

Filed Aug. 11, 1971, Ser. No. 170,834
Int. Cl. B60q *1/00*; 356 *206*
U.S. Cl. 340—53 5 Claims

An apparatus for detecting the light output loss of a headlamp due to deposited dirt-film obstructing light emission for activating washing nechamism and/or for signaling the driver to wash the headlamps and/or to actuate the headlamp washing mechanism to remove the deposited dirt-film, having a reference photo electric cell on the lamp surface to prevent dirt-film entry therebetween and a reading photo electric cell spaced from the lamp surface to permit dirt-film to enter and deposit therebetween. The output from each cell is fed to a differential amplifier and any substantial output from the amplifier actuates the signal to the driver and/or the headlamp washing mechanism. A potentiometer and/or a variable resistor in the lines between the cells and the amplifier allows balancing the amplifier at null or low output when the headlamp is devoid of dirt-film. Upon the presence of dirt-film

between the reading cell and the headlamp, the amplifier becomes unbalanced and emits sufficient EMF to power a signal to the driver and/or to actuate headlamp washing



mechanism. The apparatus is automatic, may be turned on and off with the headlamps of a vehicle, and may actuate washing mechanism and/or a warning lamp directly or through a relay.

3,736,561

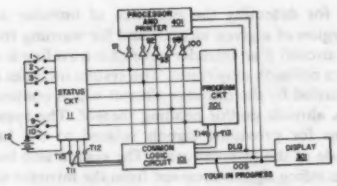
PATROL TOUR SYSTEM

Delbert O. Rumpel, Mundelein, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Mar. 24, 1972, Ser. No. 237,834

Int. Cl. G08b 25/00

U.S. Cl. 340—147 P **20 Claims**



A patrol tour system for insuring that the tour station switches are operated in the proper sequence and within a predetermined amount of time by the guard making the tour which system comprises a common logic circuit for providing an indication of a delinquency in the time between the operation of the tour stations, an indication when the tour stations are operated out of a prescribed sequence, a tour in process indication, and a tour end indication, a status circuit having latching circuits connected to each of the tour station switches for prohibiting the repetitive reset of a common logic timing means by repetitive operation of only one of the tour station switches, and optionally a program circuit for establishing a predetermined sequence of operations of the tour stations.

3,736,562

PROGRAMMABLE ELECTRICAL CONTROL SYSTEM FOR A TRANSPORT HOIST

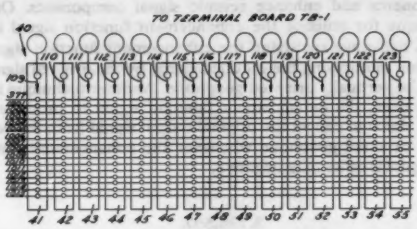
Leo Z. Zeleney, Warren, Mich., assignor to Ionic International, Inc., Warren, Mich.

Filed Nov. 24, 1969, Ser. No. 879,353

Int. Cl. H04q 3/00

U.S. Cl. 340—149 R **18 Claims**

A work transfer apparatus movable along a row of stations and including a vertically movable hoist for raising and lowering a barrel or tray of work at selected stations. A programmable control system moves the apparatus from one station to



another in a predetermined sequence and for raising or lowering the hoist at each station in the program.

3,736,563

PROGRAM CONTROL UNIT FOR A DIGITAL DATA PROCESSING INSTALLATION

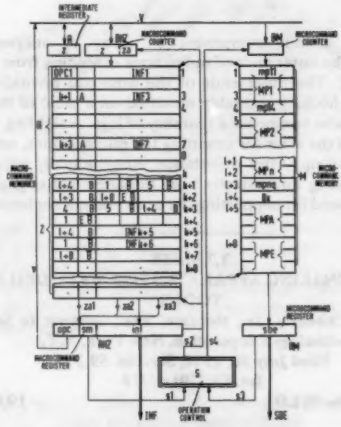
Gunter Beckinger; Hannes Goullon, both of Munich; Gerhard Wiest, Gauting; Klaus Wehrend, and Hans-Albrecht Kiessling, both of Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 30, 1971, Ser. No. 129,542

Claims priority, application Germany, Mar. 31, 1970, P 20 15 272.1

Int. Cl. G06f 9/12, 9/16

U.S. Cl. 340—172.5 **11 Claims**

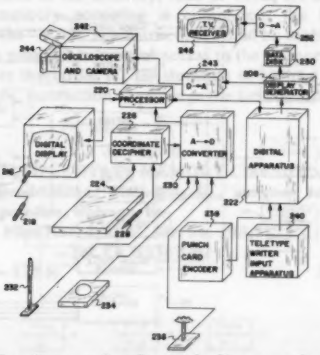


A program control unit for a digital data processing installation is described. The program control delivers macro-commands from a macro-command memory, and micro-commands from a micro-command memory. The micro-commands can be delivered singly or in selected combinations. In addition to the main commands in the macro-command memory which act as macro-commands for directly releasing micro-programs, there are also main commands which follow each other and indirectly cause the delivery of one or more micro-commands. Indirect delivery of micro-commands is caused in any case by a machine address of a memory cell, belonging to the pertinent main command, related to the macro-command memory for another macro-command. At least one auxiliary command which can be called up by different main commands is contained in a memory cell of this type. Each auxiliary command determines, by means of a micro-command machine address related thereto of the memory cell in the micro-command memory, the delivery of this micro-command or the delivery of this micro-command and the micro-command which follows in the micro-command memory.

3,736,564
ELECTRONICALLY GENERATED PERSPECTIVE IMAGES

Gary S. Watkins, Salt Lake City, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed June 1, 1971, Ser. No. 148,801
Int. Cl. G06f *15/20*; G06g *7/48*
U.S. Cl. 340—172.5 55 Claims

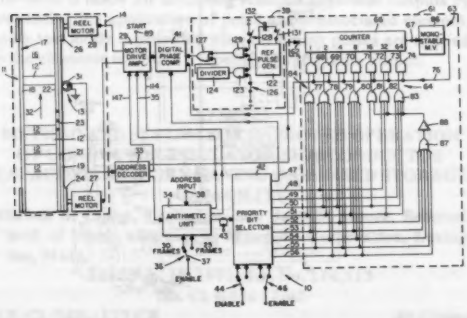


A method and system for electronically generating and displaying shaded perspective images of three-dimensional objects on a two-dimensional view plane by providing electrical signals representative of the surfaces of an object and identifying and utilizing only the signals representing visible surfaces to display the perspective images. More specifically, electrical signals defining surfaces of a three-dimensional object are converted to define the projections of the surfaces onto a two-dimensional image or view plane defined by a raster scan display device. The converted signals defining surfaces which are to be displayed, depending on the desired orientation of the object, are determined by comparing the relative depths of segments of the surfaces along each scan line of the display and selectively subdividing the scan lines according to the visual characteristics of the segments when necessary. Signals defining the visible segments are then utilized to control the intensity of the display. The visibility determination and subsequent displaying of the visible surfaces are provided at a real time rate, i.e., at the scanning rate of the display which may be on the order of 1/30 second.

3,736,565
PROGRAMMABLE TRANSPORT CONTROLLER

George B. Sidline, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Nov. 16, 1970, Ser. No. 89,567
Int. Cl. G06f *13/04*
U.S. Cl. 340—172.5 21 Claims

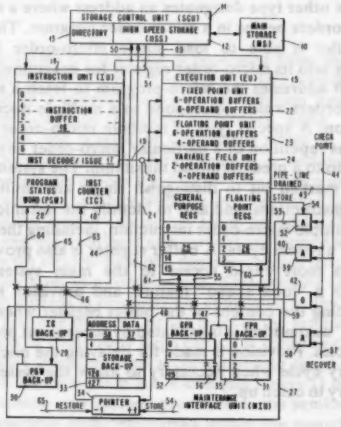


A magnetic head is located to reproduce signals recorded in binary notation along a track of magnetic video tape to identify its frames. The frame identifying signals carry clock and address signal information and are recorded in a code to address consecutive frames sequentially. As the magnetic tape is advanced to position a particular frame at the magnetic head location, the frame identifying signals are reproduced and decoded to obtain the frame address signals and the clock signal. The reproduced frame address signals are compared to the address signal of the particular frame to generate signals representative of the distance the particular frame must be advanced to position it at the magnetic head. The clock signal obtained from the decoded frame identifying signals is coupled to an adjustable frequency divider. When the particular frame is further than a certain distance from the magnetic head location, the tape transport is commanded to advance the tape at the maximum possible speed. As the particular frame is advanced to be within each of certain ranges of distances of the magnetic head location, the corresponding distance representative signal sets the divider to divide the frequency of reproduced clock signal by one of a set of selected numbers. The divided clock signal frequency is compared to a reference frequency signal to command the tape transport drive motor to advance the magnetic tape at a speed corresponding to a clock signal frequency which, after being divided, equals the frequency of the reference frequency signal. The distance representative signal is coupled to stop the advance of the tape when the particular frame arrives at the magnetic head location.

3,736,566
CENTRAL PROCESSING UNIT WITH HARDWARE CONTROLLED CHECKPOINT AND RETRY FACILITIES

David W. Anderson, Poughkeepsie; Richard N. Gustafson, Hyde Park; Lance H. Johnson; Francis J. Sparacio, both of Poughkeepsie; William M. Tomas, Saugerties, and James J. Webster, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1971, Ser. No. 172,804
Int. Cl. G06f *11/04*
U.S. Cl. 340—172.5 7 Claims



A data processing system with a central processing unit (CPU), main store (MS), and high speed storage (HSS) interposed between the CPU and store. The CPUhas a high degree of overlap and pipelining. That is, a plurality of instructions are buffered and predecoded through several stages prior to issuance to individual execution units where further instruction and operand buffering takes place. The execution units may be highly pipelined, wherein succeeding instructions can be issued to the execution unit prior to the completion of execution of a prior instruction. Additional hardware is added

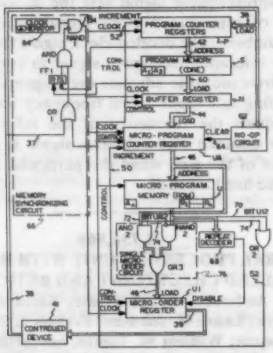
providing the ability to periodically establish a checkpoint which stores a minimum amount of CPU status information to permit processing to proceed with a plurality of instructions with the ability to cause the CPU to re-establish all of the data operated on and the status at the time the checkpoint was made.

3,736,567

PROGRAM SEQUENCE CONTROL

Amram Lotan, Holon, Israel, and Dixson Teh-Chao Jen, Monroe, Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Sept. 8, 1971, Ser. No. 178,695
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 **24 Claims**



Program sequence control is described in connection with a computer having a main system program and one or more micro-order programs. The instructions in the system program are of two types: one type actually comprises a micro-order, and the other type designates an address where a sequence of micro-orders begins in a micro-order program. The sequence controller is able to load single micro-order instructions directly into its micro-order register for execution, or alternatively it addresses the micro-program to fetch a sequence of micro-orders which correspond to a multiple micro-order instruction. A special type of multiple micro-order instruction requires repetition of a particular micro-order any number of times up to a predetermined maximum. The system employs a single marked bit to distinguish single and multiple micro-order instructions, and also to identify the last micro-order in any multiple micro-order instruction, including the last repetition of a repeat cycle. A buffer register is also provided which permits more rapid access to the main system program through a "look ahead" feature, and provision is made for discarding the content of the buffer register when the "look ahead" assumption is invalidated by subsequent program contingencies. Provision is made for delaying the micro-program memory cycle when necessary to allow the system program memory to catch up.

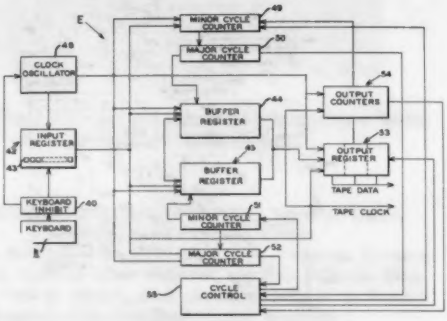
3,736,568

SYSTEM FOR PRODUCING A MAGNETICALLY RECORDED DIGITALLY ENCODED RECORD IN RESPONSE TO EXTERNAL SIGNALS

Richard K. Snook, Bridgeton, Mo., assignor to Digitetics Incorporated, Bridgeton, Mo.

Division of Ser. No. 12,322, Feb. 18, 1970, Pat. No. 3,665,115.
This application Sept. 8, 1971, Ser. No. 178,755
Int. Cl. G06f 3/06
U.S. Cl. 340—172.5 **11 Claims**

An apparatus for producing a magnetically recorded digitally encoded record in response to receipt of external signals, such as from a key operated machine capable of generating such external signals. The source of the external signals may be interfaced to an electrical circuit of a recorder forming part of the aforesaid apparatus for producing a magnetic tape record. The recorder generally includes an input register and two internal buffer registers controlling information transfer rates between the keyboard and the magnetic tape unit. A clock oscillator permits transfer from the input register to the buffer registers and from the buffer registers to an output register. An input major cycle counter and an input minor cycle counter is associated with each of the buffer registers for accumulating the number of words in storage. As counts from the two cycle counters are accumulated, the input from a buffer register is transferred to the output register and written on the tape in pretimed relationship to movement of the tape. Thus, the apparatus provides a magnetically recorded record which is readable by digital computing equipment for automatically preparing a transcription of the record.

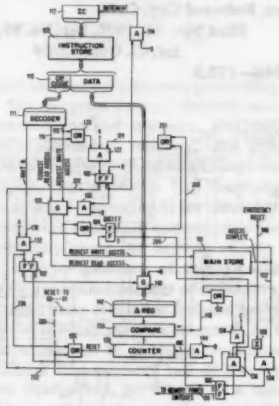


3,736,569

SYSTEM FOR CONTROLLING POWER CONSUMPTION IN A COMPUTER

Willard G. Bouricius, Katonah; Donald C. Jessep, Jr., Pound Ridge, both of N.Y.; William C. Carter, Ridgefield, Conn., and Aspi B. Wadia, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,922
Int. Cl. G06f 9/06
U.S. Cl. 340—172.5 **6 Claims**



The disclosed system causes power to be removed from the memory for a chosen time duration after each time that the

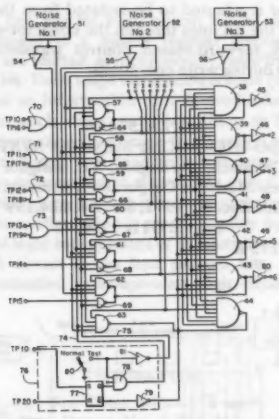
memory is used. The time duration can be chosen as desired and is specified by a "WAIT N" instruction. When this instruction appears, the power to the memory is removed therefrom and accesses to the memory are prevented. The time duration is entered into a register and the contents of this register are compared with the contents of a counter which has a clock pulse train applied thereto until equality is attained whereby an equality signal issues. The latter signal is applied to restore power to the memory and, with appropriate logic, permits accesses to the memory, read or write, for example. When the memory accessing is completed, the N units specified by the "WAIT N" instruction would be usable at the option of the program to control access to the memory and to remove power therefrom for the duration of N time units. A new "WAIT N" instruction can change the time duration.

3,736,570

MULTIPLE STATE MEMORY CIRCUIT

Melvin C. Hendrickson, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Nov. 4, 1971, Ser. No. 195,717
Int. Cl. G11c *5/02*
U.S. Cl. 340—173 R **5 Claims**



An inhibitable random pulse generator for a subscription television system or the like generates an output pulse indicative of a random one of a plurality of possible counting states, one or more of which may be inhibited to narrow selection to the remaining states. A plurality of logic elements within the generator are connected in a novel mutually exclusive circuit whereby one and only one can produce an output at a time. Individual sources of random noise applied to each element produce an output from an unpredictable one of the elements. Provision is made for inhibiting selected generator outputs by preventing the application of noise to the associated element, and a test mode is provided wherein timing pulses are applied to the elements to obtain a repetitive predictable output.

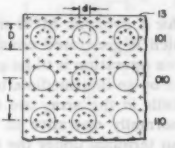
3,736,571

METHOD AND SYSTEM FOR IMPROVED OPERATION OF CONDUCTOR-INSULATOR-SEMICONDUCTOR CAPACITOR MEMORY HAVING INCREASED STORAGE CAPABILITY

Mitchell S. Cohen, Lexington, and John S. Moore, Belmont, both of Mass., assignors to Micro-Bit Corporation, Lexington, Mass.

Filed Feb. 10, 1971, Ser. No. 114,113
Int. Cl. G11c *11/42*
U.S. Cl. 340—173 CR **40 Claims**

A computer memory system employing a planar metal-insulator semiconductor-metal memory capacitor sandwich for selectively storing an array of electric charges in the insulator near the insulator-semiconductor interface in patterns which are representative of binary encoded data. The method and system for initially uniformly charging the planar surface of the insulator of a memory capacitor employing p-type semiconductors with positive polarity electric charges, maintaining the positive electric charges at those data bit sites representative of binary "1's" and removing positive charges at the binary "O" data sites to form non-charged areas of diameter D surrounding the binary O data bit sites where D is the equivalent or greater than several electron path diffusion lengths in the semiconductor. The positive charges are formed in the insulator layers by bombarding the insulator with an electron beam while maintaining a positive polarity electric field across the memory capacitor. At the data bit sites where binary "O's" are to be written, a negative polarity field gradient is established across the capacitor while irradiating the selected bit site with the electron beam. At each bit site the electron beam is appropriately manipulated by causing it to trace out a circular path of diameter $D>d$ where d is the diameter of the electron beam. By spacing the data bit sites apart a distance $L>D$ where the center-to-center spacing distance L is on the order of 20 microns or less, a grid-like lattice of positive electric charges is formed at the insulator-semiconductor interface which surrounds all of the data bit sites. This in turn induces a corresponding interconnected grid-like lattice layer of strongly inverted and highly conducting semiconductor adjacent to the insulator-semiconductor interface. This highly conductive inverted semiconductor lattice layer surrounds and interconnects substantially all of the positively charged data bit sites but is separated from the non-charged, binary O bit sites by the distance D/2 which is the equivalent of or > several electron path diffusion lengths in the semiconductor. In memory capacitors using n-type semiconductors, the inverse of the charge states in p-type semiconductors is employed. During reading, a read-out electron beam selectively probes the data bit sites while a substantially zero voltage or slightly negative bias potential is maintained across the memory capacitor. Upon probing a charged binary 1 bit site, electron-hole pair carriers are formed and are separated by the electric field of a depletion region induced in semiconductor layer as a consequence of the positive charges. The electron current is conductively connected to the highly conducting grid-like inverted lattice layer in the semiconductor and results in a relatively large capacitor charging current to the memory capacitor and a corresponding large output signal. Upon impinging into a non-charged binary O data bit site, electron-hole pair carriers produced in the semiconductor by the electron beam recombine within the non-charged region of diameter D prior to reaching the strongly conducting, inverted, grid-like layer. Hence, at most only a minimal charging current to the memory capacitor is produced that is readily distinguished from the output current produced at the charged binary 1 data bit sites. Enhanced operation is obtained by pretreatment of the semiconductor through gold doping or annealing in oxygen at the high temperatures in order to enhance recombination rates in the non-charged areas of diameter D. Treatment of the metalized face of the insulator that is subjected to the write-read electron beam to produce a metal thickness on the order of 2,000 A units plus or minus 500 A units results in overcoming undesired disturb



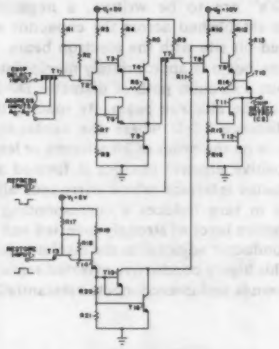
effects produced by scattering electrons. By appropriate read-rewrite techniques interaction on adjacent bit sites by scattering electrons can be minimized and long term degradation of the memory over a number of operating cycles prevented.

3,736,572

BIPOLAR DRIVER FOR DYNAMIC MOS MEMORY ARRAY CHIP

George K. Tu, Wappingers Falls, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,226
Int. Cl. G11c *11/24, 11/40*
U.S. Cl. 340—173 DR **40 Claims**



A bipolar driver for a dynamic MOS memory array chip. The drive signal which is generated consists of a high-level pulse if a read or write operation is to be performed on a cell in the array, followed by an intermediate level pulse if during the same cycle all cells in the array are to be refreshed. A pulse generator is normally operative to apply a high-level potential to an output terminal under the control of an input decoder. When a refresh pulse is to be generated, the pulse generator is made to energize its output terminal independent of the operation of the decoder, but a diversion of current in the pulse generator at this time causes the potential at the output terminal to be at a lower level.

3,736,573

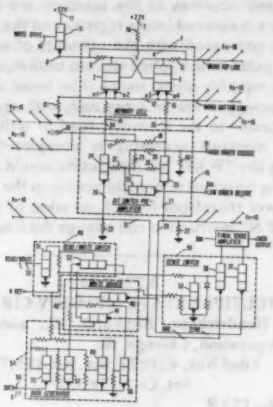
RESISTOR SENSING BIT SWITCH

Frederick T. Blount, Wappingers Falls, N.Y.; Henry A. Geller, Richmond, Vt.; Richard D. Moore, Hopewell Junction, N.Y.; Howard Leung; Scott C. Lewis, both of Essex Junction, Vt., and Joseph M. Redmond, Philadelphia, Pa., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 11, 1971, Ser. No. 197,910
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **40 Claims**

A data storage circuit utilizing a bistable memory cell and a resistor sensing bit switch preamplifier for performing read and write operations. The cell contains two double-emitter semiconductor elements having their bases and collectors cross-coupled to form a bistable circuit. Each element has one emitter connected in common to a resistor terminated word line to permit bilevel conduction of the elements from a low level standby state to a higher level power-up state for access operations. The second emitter of each element is coupled through collector-emitter paths of a pair of amplifying and switching transistors to corresponding ones of resistor terminated bit sense lines. The amplifying transistors are concurrently biased on and off by a gating transistor under selective control of a bit driver decoding circuit. In read operations, the stored data is sensed at the bit sense line resistors by a final sense amplifier.

For write operations, a write driver is provided to provide appropriate voltages at the bit sense line resistor as required for storage of required data in the memory cell. The final



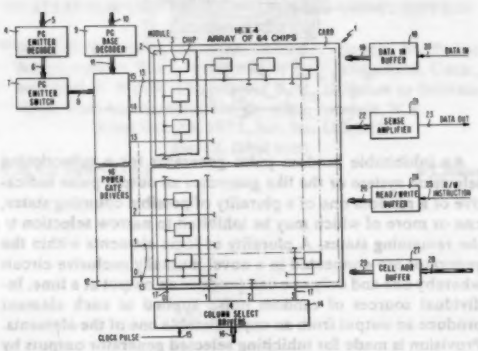
sense amplifier is adapted to be isolated from the circuit by connection to the bit lines through the collector-emitter path of a normally forward-biased control transistor which is reverse-biased during write operations.

3,736,574

PSEUDO-HIERARCHY MEMORY SYSTEM

John Edwin Gersbach, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1971, Ser. No. 214,199
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **23 Claims**



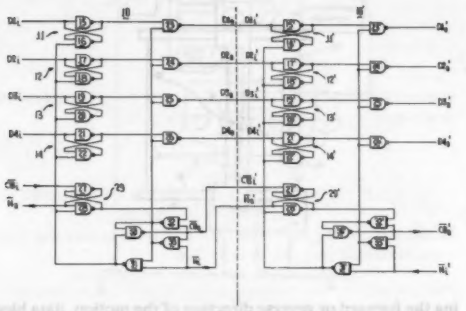
A monolithic memory system for a digital computer comprises an array of monolithic chips arranged in rows. Each chip includes an array of memory cells, associated support circuits, and current reference sources connected to the support circuits. Each of a plurality of power gate drivers has a line connected to the current reference sources of a respective row of chips. One power gate driver is actuated to supply power to the current reference sources of a selected row of chips which includes the selected memory cell to be addressed and the power is uninterruptedly maintained for so long as the successive cells being addressed are within the selected row of chips. When the cell being currently addressed is within a different row of chips, the original power gate driver is deactuated and a new power gate driver is actuated to supply power to the current reference sources of the new row of chips containing the memory cell to be addressed.

3,736,575

SINGLE LINE PER BIT ASYNCHRONOUS CIRCUIT AND SYSTEM

Dallas J. Mallerich, Jr., Ellicott City, Md., assignor to Dyad Systems, Inc., Randallstown, Md.

Filed Feb. 1, 1972, Ser. No. 222,520
Int. Cl. G11c 19/00
U.S. Cl. 340—173 R 17 Claims



A single line per bit logic circuit serves as one of plural cascaded stages in a binary register through which data characters are shifted asynchronously, serially by character, parallel by bit. Each stage has a neutral state (no stored information) and an information state (stored information). Control logic in each stage controls shifting as follows: stage *i* receives information from stage (*i*−1) only if stage (*i*−1) is in its information state and stage *i* is in its neutral state; likewise, stage *i* shifts information to stage (*i*+1) only if *i* is in its information state and stage (*i*+1) is in its neutral state. A single line per data bit configuration is made possible by rendering the shift control logic independent of the data bits. In one embodiment, each circuit stores four parallel bits, the shifting of which is controlled by independent logic circuitry in that circuit.

ERRATUM

For Class 340—174 see:
Patent No. 3,736,419

3,736,576

PLATED WIRE MAGNETIC MEMORY DEVICE

Emil Toledo, Natick, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 27, 1970, Ser. No. 93,333
Int. Cl. G11c 11/14
U.S. Cl. 340—174 PW 8 Claims

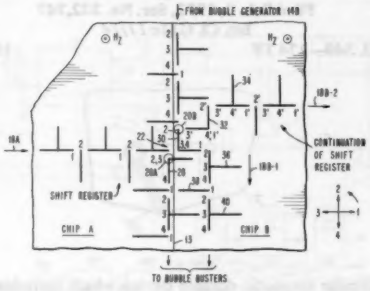
An electropolished, copper plated, beryllium copper wire is plated with a composite coating of a nickel-iron-cobalt alloy. Such coating consists of a layer having a high anisotropic field parameter, of the order of 6 oersteds or higher, adjacent the surface of the wire, superimposed by a layer having a lower anisotropic field parameter, of the order of 4 oersteds or less. The wire is plated in two plating cells, the first of which is provided with a plurality of passages directing the flow of a plating electrode with a major component of flow across the wire and a minor component of flow in one direction along the wire. The second plating cell is provided with a plurality of passages directing the flow of a plating electrolyte substantially transverse to the wire. The electrolyte supplied to the first cell contains salts of iron, nickel and cobalt, with cobalt being present in a relatively high concentration. A similar electrolyte is supplied to the second cell except that its maximum concentration of cobalt is about one fifth of that of the first electrolyte.

3,736,577

DOMAIN TRANSFER BETWEEN ADJACENT MAGNETIC CHIPS

Hsu Chang, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1970, Ser. No. 103,047
Int. Cl. G11c 21/00, 11/14
U.S. Cl. 340—174 TF 22 Claims



A structure for cylindrical, single wall magnetic domains using a plurality of magnetic chips to achieve large size devices, such as long shift registers. The magnetic chips are pieced together and domain propagation from one chip to another is effected by an interaction between domains located on adjacent chips. The domains themselves are not able to cross the boundary between adjacent chips. Propagation means in one chip brings domains representing information bits in that chip closely enough to a second chip that these domains will magnetically interact with other domains in the second chip, causing the domains in the second chip to then propagate as information bits. Consequently, a large device is comprised of a number of smaller segments which cooperatively interact. This overcomes the constraint of bit capacity limitation due to the dimensions of magnetic chips. This also facilitates the combined use of chips with different properties as designed for different functions.

3,736,578

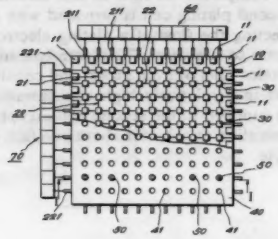
GALVANO-MAGNETRO EFFECT APPARATUS

Noboru Masuda, Kawaguchi, Japan, assignor to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed Dec. 31, 1970, Ser. No. 103,151
Claims priority, application Japan, Dec. 31, 1969, 44/1363
Int. Cl. G11c 11/18, 11/02
U.S. Cl. 340—174 HA 12 Claims

A galvano-magnetro effect apparatus wherein a matrix, comprising a plurality of 4-terminal Hall effect devices which

form intersections in the matrix, and at least one magnetic pole is provided so that the magnetic flux can be concentrated onto at least one of the Hall effect devices, and input current is



supplied from one of the vertical and horizontal terminal sides of the matrix and output voltage is obtained at the other terminal side of the matrix.

3,736,579

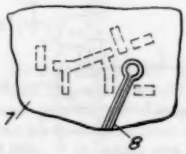
CIRCULAR MAGNETIC DOMAIN DEVICES

Anthony Marsh, Blisworth, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Feb. 2, 1972, Ser. No. 222,747

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **10 Claims**



A circular magnetic domain device which includes a layer of uniaxial magnetic material formed on or in a surface of a magnetic member having at least one easy magnetization direction substantially parallel to the said surface thereof, the layer material having a single unique easy magnetization direction substantially normal to the said surface. A first pattern of a soft magnetic material is interposed between the uniaxial magnetic layer and the magnetic member, and a pattern of an electrically conductive material is formed on the upper surface of the uniaxial magnetic layer. The magnetic member can be formed on the surface of a non-magnetic substrate, and a second soft magnetic pattern can be formed on the upper surface of the uniaxial magnetic layer. The second soft magnetic pattern can be complimentary to, and in register with, the first pattern in order to obtain higher propagation rates for the circular magnetic domains.

3,736,580

PLAY BACK - MACHINE CONTROL (POSITION INFORMATION STORAGE AND REPRODUCTION DEVICE)

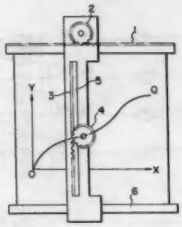
Jiro Chiba, Koohoku-ku, Yokohama-shi, Kanagawa-ken, and Tadaaki Kanazaki, Komae-shi, Tokyo, both of Japan, assignors to Tokyo Seimitsu Sokki Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 154,630, June 18, 1971, abandoned, which is a continuation of Ser. No. 836,818, June 26, 1969, abandoned. This application Apr. 24, 1972, Ser. No. 246,787

Int. Cl. H03k *13/02*

U.S. Cl. 340—174.1 J **15 Claims**

A control unit for storing the information of the coordinates corresponding to many-dimensional motion of a moving point and for reproducing this motion by the stored information wherein pulse trains corresponding to the information data of each coordinate are counted by a reversible counter during a predetermined time in such a manner that the number of pulses in these trains is represented in a binary coded form so as to constitute data blocks including each one binary digit show-



ing the forward or reverse direction of the motion, data blocks thus formed are sequentially stored in series into a storage device (preferably a rotating magnetic drum or disk) and the stored data blocks are read out one by one through the output gates of a linear interpolation circuit, so that the reproduced pulse trains may approximate the original motion by a line-segment motion.

3,736,581

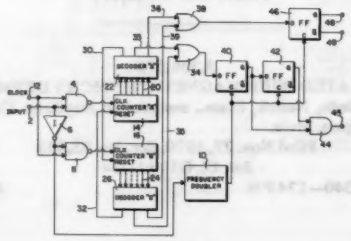
HIGH DENSITY DIGITAL RECORDING

Ivars P. Breikss, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 2, 1971, Ser. No. 159,356

Int. Cl. G11b *5/02*

U.S. Cl. 340—174.1 A **10 Claims**



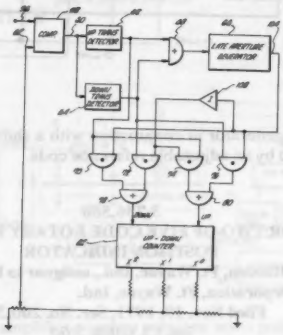
A playback system for a high density digital recording carrying digital information in the form of a code composed of pulse lengths between successive zero crossings. Random variations in these pulse lengths after playback of the recorded information are compensated by converting the duration of the pulse lengths into counts of a fixed clock and, subsequently, decoding the count data into binary form by sensing a first plurality of counts for one type of binary data and a second plurality of counts for a second type of binary data. The two types of binary data are temporarily stored in respective flip-flop circuit between successive decoding operations controlled by a clock signal derived from a frequency multiplication of the input signals.

3,736,582

GALLOPING BASE LINE COMPENSATING CIRCUIT

Kermit A. Norris, Duarte, Calif., assignor to Leach Corporation, Azusa, Calif.

Filed Mar. 20, 1972, Ser. No. 236,379
Int. Cl. G11b 5/02, 5/44
U.S. Cl. 340—174.1 H 18 Claims



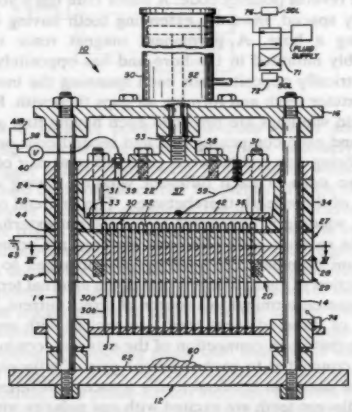
A compensation circuit that operates to appropriately adjust upward or downward the zero threshold or base line used in recovering digital data recorded in a coded form susceptable to galloping base lines, is disclosed. The compensation circuit operates to detect each transition of the coded signal with respect to the zero threshold. The transitions are further detected to be either an up-going or down-going transition and either early or late with respect to a selected time at which such transition should properly threshold Adjustment of the zero trashold level is made in accordance with the detected characteristics, i.e., up-going or down-going, early or late, of each transition.

3,736,583

APPARATUS FOR DETECTING THE PRESENCE OF HARD SOLID PARTICLES IN A BODY OF SOFTER SOLID SUBSTANCE

Richard A. Smith, Gibsonia, and Elmer E. Harris, Glenshaw, both of Pa., assignors to H. J. Heinz Company, Pittsburgh, Pa.

Filed Jan. 13, 1971, Ser. No. 106,043
Int. Cl. G08b 21/00
U.S. Cl. 340—240 11 Claims



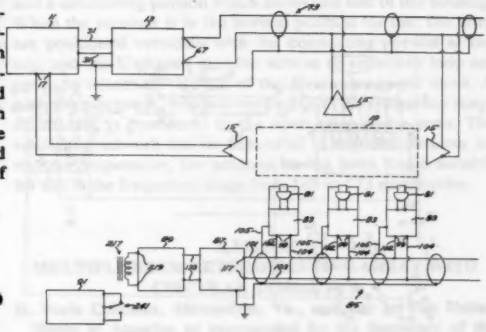
Apparatus for detecting the presence of hard solid particles in a body of softer solid substance, such as the presence of bone fragments in chicken flesh, is disclosed. The apparatus includes a probing unit having a matrix of uniformly spaced probes slidably received in a plate. Above the plate is a chamber into which is supplied pressurized fluid which acts to urge each probe downwardly against the plate with equal pressure. Means are provided for driving the probing unit downwardly to force the probes through the solid substance to be examined. An electrical conductor plate is arranged over all of the upper terminal portions of the probes for sensing the upward movement of the probes when the fluid pressure is insufficient to restrain the probe against such upward movement. Upward movement of any of the probes will result when a hard object is encountered. A signal means is activated to indicate the presence of a hard particle when any of the terminal portions of the probes contacts the conductor plate.

3,736,584

MOTION DETECTOR AND INTRUDER ALARM SYSTEM

Kenneth R. Hackett, Boulder, and Ralph W. Goble, Boulder, both of Colo., assignors to Sontrix, Inc., Boulder, Colo.

Filed Aug. 13, 1971, Ser. No. 171,420
Int. Cl. G08b 13/16
U.S. Cl. 340—258 A 15 Claims



Sound is generated at a reference frequency within a selected area to be protected and a plurality of sound sensing transducers are positioned to individually sense echo signals carrying Doppler beat frequencies produced by the movement of an object, hence an intruder, within the protected area. Amplifiers substantially isolated from electrical interference are connected to each transducer to amplify each sensed signal and the amplified signals are summed and processed to detect the Doppler beat frequency and generate an alarm actuating signal to indicate the presence of an intruder.

3,736,585

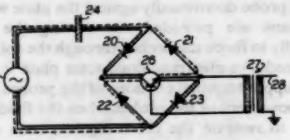
APPARATUS FOR INDICATION OF MEASURING VALUES

Hans Langheinrich, Offenbach/Main, Germany, assignor to VDO Tachometer Werke, Adolf Schindling GmbH, Frankfurt/Main, Germany

Filed Feb. 24, 1970, Ser. No. 13,363
Claims priority, application Germany, Feb. 22, 1969, P 19 09 026.7
Int. Cl. H03k 13/02
U.S. Cl. 340—324 R 19 Claims

An apparatus for indication of measuring values, which comprises a plurality of luminous cells excitable by means of alternating voltage and disposed in bargraph display succession. An electric switch is provided in form of a rectifier

bridge. The luminous cells are disposed in the alternating current path of the rectifier bridge. A one-direction-switching element is also arranged, and the rectifier bridge is capable of being short-circuited by means of the one-direction-switching element.

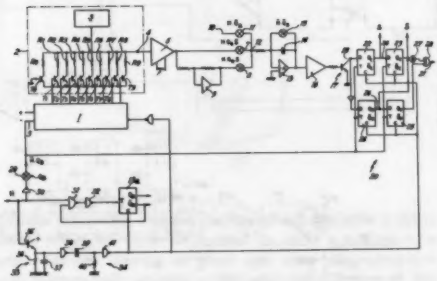


3,736,586

ANALOGUE-TO-DIGITAL VOLTAGE CONVERTER

Jacques Donjon, Paris 15, France, assignor to Societe de Fabrication d'Instruments de Mesure SFIM

Continuation of Ser. No. 33,681, May 1, 1970, abandoned.
This application Mar. 22, 1972, Ser. No. 251,540
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 NT **8 Claims**



The invention relates to an analogue-to-digital converter. The converter comprises a generator for supplying reference voltages decreasing in amplitude in accordance with a binary law, means for adding the reference voltages algebraically in succession to the input voltage in decreasing order, these voltages being added with a sign such that the successive sums tend towards zero, means for supplying a signal representing the sign of a particular algebraic sum, this signal being used to give the following reference voltage the sign suitable for the following algebraic sum to approach zero, and digital processing means for the signal representing the sign for supplying, in serial form, the numerical information representing the amplitude.

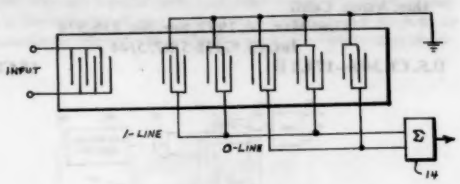
3,736,587

COHERENT FREQUENCY HOPPED, PHASE MODULATED ACOUSTIC SURFACE WAVE GENERATOR

Henry J. Bush, Rome; John N. Entzminger, Jr., Clinton, and Walter R. Richard, Herkimer, all of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 26, 1971, Ser. No. 147,048
Int. Cl. G08c *1/00*
U.S. Cl. 340—351 **4 Claims**

An apparatus utilizing an acoustic surface wave having an ordered-code form to provide bi-phase modulation of an electromagnetic carrier frequency. A continuous stream of coded sequences is generated by utilizing a tapped delay line as a sequence generator in conjunction with a shift register which is actuated by an adjustable reference code.

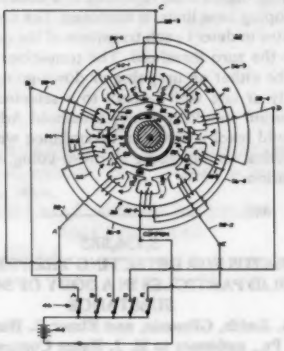


3,736,588

ONE OR TWO OF FIVE CODE ROTARY MAGNETIC POSITION INDICATOR

Phillip L. Harden, Ft. Wayne, Ind., assignor to Bowmar Instrument Corporation, Ft. Wayne, Ind.

Filed Nov. 19, 1971, Ser. No. 200,316
Int. Cl. G08b *5/00*
U.S. Cl. 340—378 R **19 Claims**

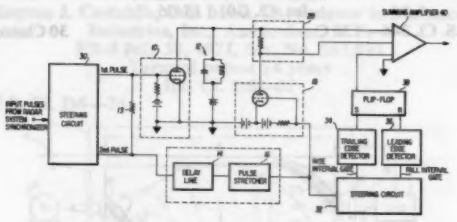


A rotary magnetic position indicator for displaying 10 discrete indicia in response to a one or two of five code or a one of five reverse polarity code. A stator core has a yoke with 10 equally spaced, inwardly extending teeth having inner ends defining a bore. A permanent magnet rotor member is rotatably mounted in the bore and has oppositely polarized diametrically opposite ends each spanning the inner ends of three stator teeth and forming air gaps therewith. Five identical field windings are provided each having first and second ends and each comprising first and second coils on the yoke, there being one coil between each different pair of teeth and the two coils of each different winding having a different group of three teeth therebetween. The first end of each different winding is connected to a different external terminal and the seconds ends of all the windings are connected to a common terminal. The windings are arranged so that upon connection of each different one of the external terminals and the common terminal to a source of direct current, a different group of three adjacent teeth are excited with one polarity, and so that upon connection of the external terminals respectively connected to each different pair of adjacent windings and the common terminal to the source, a different group of five adjacent teeth are excited with one polarity with the middle one of the group of five teeth having a higher magnetic flux density therein than the remaining projections of the group.

3,736,589
MEANS FOR GENERATING A FLAT-TOPPED PULSE WITH SINE-SQUARED RISE AND FALL CHARACTERISTICS

Sheldon I. Rambo, Baltimore, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 13, 1971, Ser. No. 207,452
Int. Cl. G01s 7/28
U.S. Cl. 343—17.1 R 6 Claims

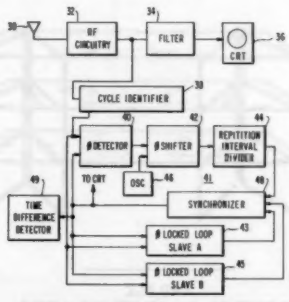


A summing amplifier receives a square wave pulse and portions of a sine-squared wave and, under control of gating pulses, produces a flat-topped pulse having sine-squared rise and fall characteristics, the timing and duration of which are determined by the gating pulses. The resulting pulse permits the functions of target illumination and tracking to be combined in a single radar transmitter.

3,736,590
LORAN-C RECEIVER

Elmer M. Lipsey, Annandale, and Arnold Swagerty, Vienna, both of Va., assignors to A-T-O Inc., Willoughby, Ohio

Filed May 12, 1971, Ser. No. 142,713
Int. Cl. G01s 1/24
U.S. Cl. 343—103 14 Claims

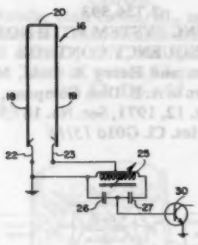


A Loran-C receiver pulse groups from master and slave transmitting stations and locally generates precisely timed sample trigger pulses which occur in substantial coincidence with the third cycle of the carrier frequency of each received pulse. A cycle identifier compares the time of occurrence of the sample trigger pulses with the third cycle of the received pulses and provides an indication if the sample trigger pulses are not in coincidence with the third cycle of a carrier of the received pulses. A phase-locked loop in the receiver maintains the sample trigger pulses in phase with the carrier frequency of the received pulses. A phase shifter in the phase-locked loop is capable of achieving phase shift increments which are equal to a half cycle of the highest frequency locally generated in said receiver. The phase-locked loop also includes a repetition interval divider which is variably controlled to skip a predetermined number of counts to achieve a variation in the period of the repetition interval.

3,736,591
RECEIVING ANTENNA FOR MINIATURE RADIO RECEIVER

Larry W. Rennels, Margate, Fla., and William J. Wilson, Chicago, Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 85,429, Oct. 30, 1970, abandoned. This application Oct. 4, 1971, Ser. No. 186,154
Int. Cl. H01q 1/24
U.S. Cl. 343—702 15 Claims

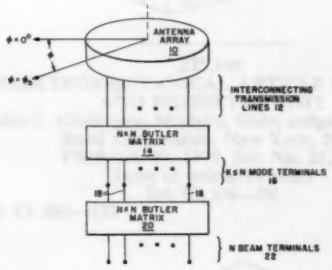


Receiving antenna for miniature radio receiver formed by conducting U-shaped member having substantially parallel elongated arms which form sides of the housing of the receiver and a connecting portion which forms one end of the housing. When the receiver is in the normal position for use, the arms are positioned vertically with the connecting portion at the top, and the U-shaped member acts as an inductive loop antenna to detect the H-field of the electro-magnetic wave. A reactance network, which is capacitive in the frequency range of interest, is connected to the open ends of the arms. The reactance network can be adjustable to tune the antenna for various frequencies, the antenna having been found suitable for use in the frequency range from 148 to 173 megacycles.

3,736,592
MULTIPLE BEAM RETRODIRECTIVE ARRAY WITH CIRCULAR SYMMETRY

H. Paris Coleman, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 256,856
Int. Cl. H01q 3/26
U.S. Cl. 343—854 2 Claims



A method and apparatus for obtaining automatic, selective retrodirective performance from a circularly symmetric antenna array. This system may be employed in an active or passive manner and accomplishes selective retrodirectivity by manipulation of beam terminals of a multiple beam matrix which in turn controls a multimodal network. The combination of the two matrix networks provide N separate beams from the circular antenna array. Also, by providing gain networks, control of the reradiated beam pattern is possible. This

system has the ability to identify the angle of incidence of any particular transmission, and is particularly suited for navigational beacon systems since the reradiated signal can provide bearing information in response to interrogation.

ERRATUM

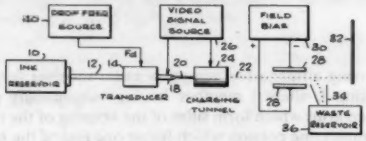
For Class 346—74 see:
Patent No. 3,736,046

3,736,593

INK DROP WRITING SYSTEM WITH NOZZLE DRIVE FREQUENCY CONTROL

Robert I. Keur, Niles, and Henry A. Dahl, Mount Prospect, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Oct. 12, 1971, Ser. No. 187,976
Int. Cl. G01d *15/18*
U.S. Cl. 346—75 **8 Claims**



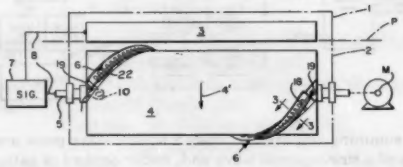
In an apparatus of the type wherein ink under pressure is applied to a nozzle which is vibrated, and the ink emitted by the nozzle thereafter breaks down into ink drops which are charged in a charging tunnel in response to video signals, an arrangement for establishing the nozzle vibration frequency to be a function of the video signals' frequency and the shape of the video signals.

3,736,594

FACSIMILE RECORDING DRUM ELECTRODE

Frederick W. Simpkins, Hudson, and Ernest Biludnikas, Brockton, both of Mass., assignors to Alden Research Foundation, Westboro, Mass.

Continuation-in-part of Ser. No. 130,111, April 1, 1971, abandoned. This application Nov. 22, 1971, Ser. No. 200,678
Int. Cl. G01d *15/06*
U.S. Cl. 346—139 C **30 Claims**



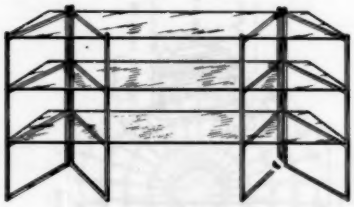
A partially folded strip electrode of electrically conducting sheet material is held curved around a drum by a coiled spring, elastic strand or spring tensioned wire attached to the drum whose intermediate portion overlies and yieldingly holds the strip against the drum with one fold extending flexibly away from the drum for cooperating with a blade electrode in marking an intermediate strip of electrical recording paper.

DESIGNS

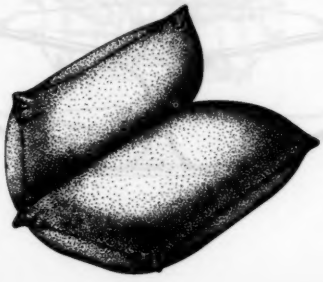
MAY 29, 1973

226,995
BEAN BAG CHAIR
Eugene J. Costabile, Oak Lawn, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed July 30, 1971, Ser. No. 167,892
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—26

226,996
DISPLAY STAND
Glenn B. Jenkins, Charlotte, N.C.
(11301 Idlewild Road, Matthews, N.C. 28105)
Filed Apr. 8, 1971, Ser. No. 132,637
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—186

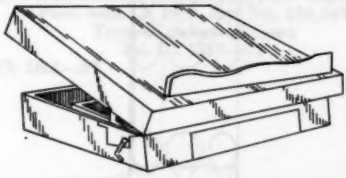


226,997
SOFA OR SIMILAR ARTICLE
William H. Oliver, 1219 N. 50th, Seattle, Wash. 98103
Filed Mar. 15, 1971, Ser. No. 124,614
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—61

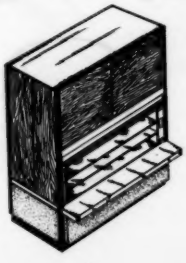


226,998
CHAIR
Eugene J. Costabile, Oak Lawn, Ill., assignor to Mohasco Industries, Inc., Amsterdam, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,639
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71

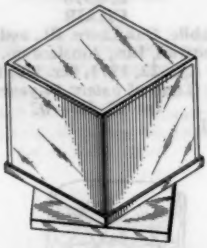
226,999
ELEVATING DESK
George N. Jessen, 554 Tam O'Shanter Drive, Las Vegas, Nev. 89109
Filed Mar. 15, 1971, Ser. No. 124,654
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—156



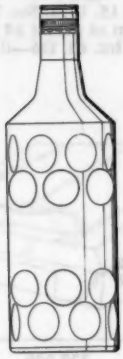
227,000
ELECTROMECHANICAL ARTICLE STORAGE AND RETRIEVAL UNIT
John L. Gianfagna, Marietta, Ohio, assignor to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 25,750
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189



227,001
COMBINED DISPLAY CUBE AND STAND THEREFOR
Robert H. Dembar, Croton, N.Y., assignor to Graphicana Corporation, Ossining, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,528
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—235

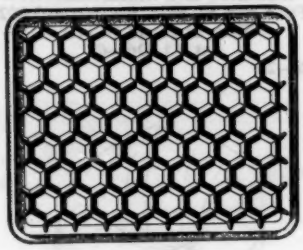


227,002
COMBINED BOTTLE AND CAP THEREFOR
Reginald Malcolm Broadhead, Maidenhead, England, assignor to Drum Horse Distillers Limited, London, England
Filed Oct. 5, 1971, Ser. No. 186,714
Claims priority, application Great Britain June 25, 1971
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—72

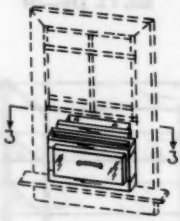


227,003
JAR
Bette C. Graham, Dallas, Tex., assignor to Liquid Paper Corporation, Dallas, Tex.
Filed Oct. 22, 1971, Ser. No. 191,951
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—141

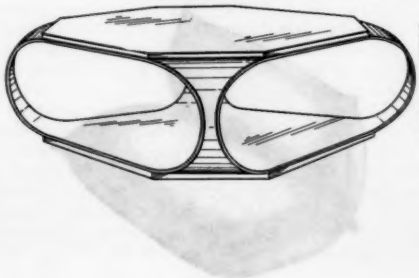
227,004
MOLDED PACKAGING TRAY FOR MEAT OR THE LIKE
Roland G. Roy, Westbrook, Maine, Richard F. Reifers, New Canaan, Conn., and Kenneth D. Bixler, Huntington, and Robert E. Ralphs, Katonah, N.Y., assignors to Diamond International Corporation, New York, N.Y.
Filed Nov. 26, 1971, Ser. No. 202,733
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219



227,005
RETRACTABLE WINDOW CASE STRUCTURE AND SUPPORT THEREFOR
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed Sept. 9, 1971, Ser. No. 179,248
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 M

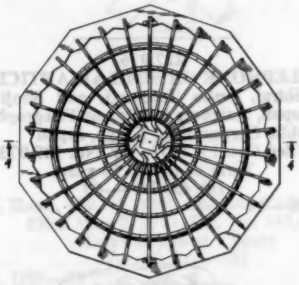


227,006
HOUSE
Hannu Vilho Sakari Laitinen, Helsinki, Finland, assignor to Oy Polykem AB, Helsinki, Finland
Filed May 27, 1971, Ser. No. 147,721
Claims priority, application Sweden Nov. 30, 1970
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A



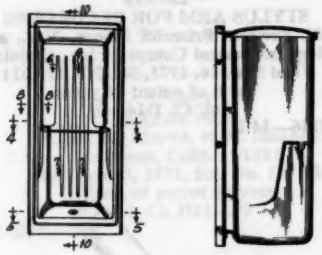
227,007
MULTIPLE UNIT TOWNHOUSE
Peter H. Edwards, Upper Arlington, Harvey R. Geiger, Columbus, and W. Byron Ireland, Upper Arlington, Ohio, assignors to Multicon Properties, Inc., Columbus, Ohio
Filed June 15, 1971, Ser. No. 153,486
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 A

227,008
BASKET FOR TREATING OBJECTS
Victor C. Wallestad, Minneapolis, Minn., assignor to Fluoroware, Inc., Chaska, Minn.
Filed Feb. 24, 1971, Ser. No. 118,593
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D16—1 R

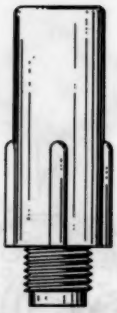


227,009
FLY CASTING FISHING REEL
Jean-Paul Lemery, Cluses, France, assignor to Etablissements Carpano et Pons, Haute-Savoie, France
Filed Sept. 29, 1971, Ser. No. 184,985
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

227,010
SHOWER ENCLOSURE
Fred C. Alexander, New Castle, Pa., assignor to Universal-Rundle Corporation, New Castle, Pa.
Filed June 23, 1971, Ser. No. 156,167
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—57



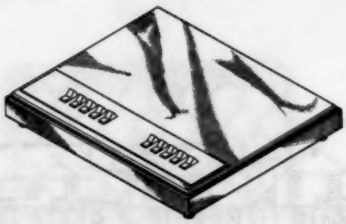
227,011
DESICCANT PLUG
Steve Kovac, Rte. 2, Box 199, Mundelein, Ill. 60060; Sally Kovac, administrator of the estate of said Steve Kovac, deceased
Filed Aug. 6, 1971, Ser. No. 169,891
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—146



227,012
MOLDED BLOWER WHEEL
James R. Ranz, Wilmington, and Chester Ward, Dayton, Ohio, assignors to Lau Incorporated, Dayton, Ohio
Filed Aug. 31, 1971, Ser. No. 176,791
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—165

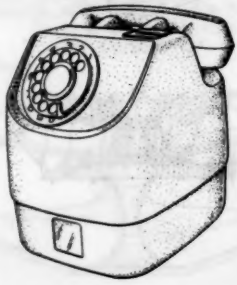
227,013
STYLUS ARM FOR RECORDERS
Howard N. Fawcett, Briarcliff Manor, N.Y., assignor to Cambridge Instrument Company, Inc., Ossining, N.Y.
Filed Mar. 16, 1971, Ser. No. 125,011
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B

227,014
CASING AND CONTROLS FOR A DUAL TELEPHONE COMMUNICATOR
Anthony A. Ardolino, Miami, Fla., assignor to Howard Research and Development Corporation, Miami, Fla.
Filed May 26, 1971, Ser. No. 147,297
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



227,015
CASING AND CONTROLS FOR A TELEPHONE COMMUNICATOR
Anthony A. Ardolino, Miami, Fla., assignor to Howard Research and Development Corporation, Miami, Fla.
Filed May 26, 1971, Ser. No. 147,298
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

227,016
TELEPHONE OR SIMILAR ARTICLE
Kazunari Shirai, Fujio Takaragi, and Shoji Matsuda, Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Oct. 13, 1971, Ser. No. 189,073
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

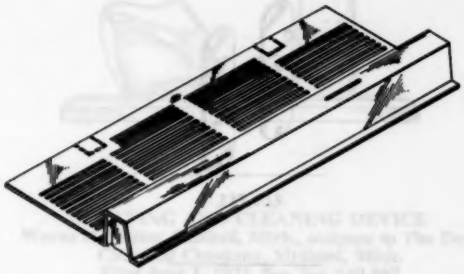


227,017
MEDAL
Ira Milton Jones, Milwaukee, Wis., assignor to World War I Overseas Flyers, Inc., Milwaukee, Wis.
Filed Apr. 19, 1971, Ser. No. 135,533
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D29—19 R

227,018
MEDAL
John E. Hand, 150 NE. 38th, Oakland Park, Fla. 33308
Filed Apr. 29, 1971, Ser. No. 138,844
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

227,019
MEDAL
John E. Hand, 150 NE. 38th, Oakland Park, Fla. 33308
Filed May 7, 1971, Ser. No. 141,469
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D29—23

227,020
COMBINED REFLECTOR AND HOOD COVER FOR AQUARIUMS OR SIMILAR ARTICLES
George J. Gould, 791 Meacham Ave., Elmont, N.Y. 11003
Filed Apr. 21, 1971, Ser. No. 136,305
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—12



227,021
TOY TRAINING DOLL
Dane B. Coe, Manhattan Beach, Calif., assignor to Innova Incorporated, Playa Del Rey, Calif.
Filed Dec. 28, 1970, Ser. No. 26,675
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4

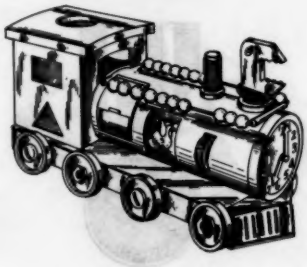
227,022
EXERCISER
Robert M. Martin, 90 N. Hudson, Pasadena, Calif. 91101
Filed Sept. 3, 1971, Ser. No. 177,924
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

227,023
TOY CONSTRUCTION PIECE OR SIMILAR ARTICLE
Raymond W. Baker, 596 Bishop Ave., Bridgeport, Conn. 06610
Filed Sept. 30, 1970, Ser. No. 25,274
Term of patent 14 years
Int. Cl. D21—*01*; D18—*03*
U.S. Cl. D34—15 GG

227,024
SLED
Ronald C. Westendorf, 114 Slater, Lake Orion, Mich. 48035
Filed Feb. 16, 1971, Ser. No. 115,918
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D34—15 AK

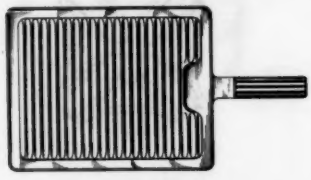
227,025
HOOP TOY
Robert Catron, 5718 Cambridge St., St. Louis Park, Minn. 55416
Filed May 12, 1971, Ser. No. 142,857
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 G

227,026
TOY LOCOMOTIVE
Walter L. Strauss, P.O. Box 252, Scarborough, N.Y. 10510
Filed May 17, 1971, Ser. No. 144,356
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 MM



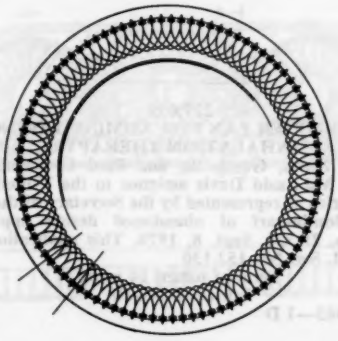
227,027
FLOWER POT
Leon Tissot, 22 Rue du Mercier, Nantua, France
Filed Jan. 4, 1971, Ser. No. 103,938
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3

227,028
SKILLET-GRILL, OR SIMILAR ARTICLE
John Behm, Santa Ana, Calif., assignor to National Silver Company, New York, N.Y.
Filed June 14, 1971, Ser. No. 153,150
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 J



227,029
ADJUSTABLE HOT TRAY LIFTER
James Demetreon, 5704 Hillside Drive, Kansas City, Mo. 64151
Filed Jan. 25, 1971, Ser. No. 109,744
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—4

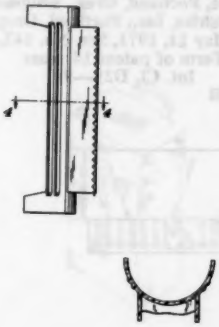
227,030
DINNER PLATE OR SIMILAR ARTICLE
Michael J. Szymanski, Camillus, N.Y., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,643
Int. Cl. D7—*01*
U.S. Cl. D44—15



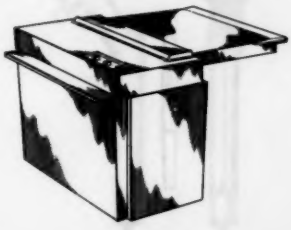
227,031
FINGER RING
Robert Sciotti, 31821 Wellston, Warren, Mich. 48093
Filed Apr. 23, 1971, Ser. No. 137,106
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—10 B

227,032
MATCH HOLDER
Kenneth P. Nash, 14719 Avis Ave., Lawndale, Calif. 90260
Filed Apr. 21, 1971, Ser. No. 136,283
Term of patent 7 years
Int. Cl. D27—*99*
U.S. Cl. D48—28

227,033
SCRAPING AND CLEANING DEVICE
Wayne R. Hutter, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 1, 1971, Ser. No. 149,097
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—23

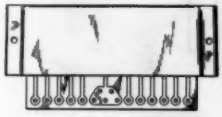


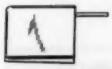
227,034
DOCUMENT FEEDER FOR A XEROGRAPHIC REPRODUCTION MACHINE
Dan R. Derby, Cupertino, Calif., and Ruediger W. Knodt, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Sept. 21, 1970, Ser. No. 25,076
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



227,035
TRANSOM ADAPTER FOR THE JET-EXHAUST CONDUIT FROM A WATER-JET POWERED BOAT
Robert K. Ridlon, Anaheim, Calif., assignor to H. N. Bailey & Associates, Santa Ana, Calif.
Filed Mar. 29, 1971, Ser. No. 129,316
Term of patent 14 years
Int. Cl. D12—*99*
U.S. Cl. D71—1 S

227,036
SECURITY ALARM SYSTEM CONTROL MODULE
Thomas J. Holce, Portland, Oreg., assignor to Kentrox Industries, Inc., Portland, Oreg.
Filed May 11, 1971, Ser. No. 142,427
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1 R

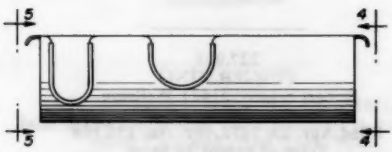




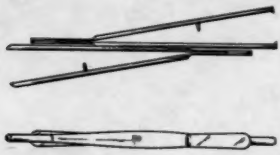
227,037
PEN
Harold F. Bajusz, Woodridge, N.J., assignor to Accutec Inc., Wallington, N.J.
Filed May 14, 1971, Ser. No. 143,729
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

227,038
COMBINED PEN AND HOUSING FOR THERMOMETER OR THE LIKE
Harold F. Bajusz, Woodridge, N.J., assignor to Accutec Inc., Wallington, N.J.
Filed May 14, 1971, Ser. No. 143,749
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

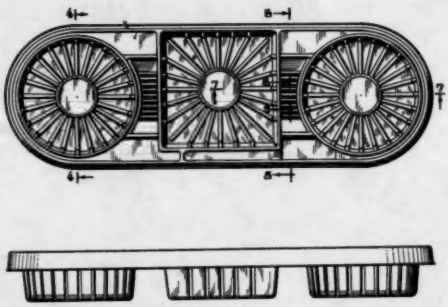
227,039
STRETCHER PAN FOR ADMINISTERING INHALATION THERAPY
Harry L. Davis, Gambrills, and Paul C. Swing, Glen Burnie, Md.; said Davis assignor to the United States of America as represented by the Secretary of the Army
Continuation-in-part of abandoned design application Ser. No. 25,320, Sept. 8, 1970. This application June 14, 1971, Ser. No. 153,130
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 D



227,040
REVERSIBLE FORCEPS
Gerald J. Lockwood, Edison, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.
Filed Oct. 27, 1971, Ser. No. 193,230
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12 R

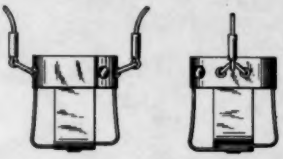


227,041
SURGICAL SCRUB TRAY
Martin Link, North Brunswick, N.J., assignor to Johnson & Johnson
Filed July 29, 1971, Ser. No. 167,544
Term of patent 14 years
Int. Cl. D24—*02*; D9—*03*
U.S. Cl. D83—1 U



227,042
HAIRDRESSER'S TRAY
Kenneth Altemare, 413 Faith Drive, Pittsburgh, Pa. 15236
Filed July 8, 1971, Ser. No. 160,980
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 A

227,043
CARRIER FOR A BEVERAGE CONTAINER OR THE LIKE
Richard H. Van Den Berg, Glendale, Wis., assignor to Dimensional Products, Inc., Milwaukee, Wis.
Filed Mar. 15, 1971, Ser. No. 124,650
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



227,044
STORAGE BAG FOR FOOD OR SIMILAR ARTICLE
Richard H. Camp, P.O. Box 62, Haines, Oreg. 97833
Filed Apr. 28, 1971, Ser. No. 138,401
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1

227,045
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Continuation-in-part of abandoned design applications Ser. No. 22,184 and Ser. No. 22,185, both Apr. 1, 1970. This application Nov. 5, 1970, Ser. No. 26,362
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—9

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF MAY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. I. Welders Limited: *See—*
Watson, Geoffrey Walter; and Jenkinson, Brian Edward, 3,735,910.

A-T-O Inc.: *See—*
Lipsey, Elmer M.; and Swagerty, Arnold, 3,736,590.

A-T-O Inc., mesne: *See—*
Bolum, Donald R., 3,736,050.

Aasted, Kai Christian Sophus. Mechanism for delivering goods from continuously operating chocolate moulding plants. 3,735,857, Cl. 198-155.000.

Abbott Laboratories: *See—*
Jones, Peter Hadley; and Perun, Thomas John, 3,736,313.

Abe, Yoshimichi: *See—*
Yanagita, Masaya; Kitahara, Masao; and Abe, Yoshimichi, 3,736,354.

Abildgaard Laboratories, Inc.: *See—*
Abildgaard, William H.; Groswith, Charles T., III; and Melgaard, Hans L., 3,736,200.

Abildgaard, William H.; Groswith, Charles T., III; and Melgaard, Hans L., to Abildgaard Laboratories, Inc. Method for vacuum molding book bindings. 3,736,200, Cl. 156-85.000.

Abraham, Dennis G.; Grenchus, Paul P.; and Mc Sparran, Ray A., to International Business Machines Corporation. Stepping motor control system utilizing pulse blanking and pulse injection techniques including plural shaft encoder. 3,736,488, Cl. 318-696.000.

Abraham, Frederick W., to Fabet, Inc. Holder and fastener. 3,735,447, Cl. 24-6.000.

Abramitis, Walter W.; Ducey, Steven C.; and Atherton, James O., to Akzona Incorporated, mesne. Herbicidal compositions. 3,736,112, Cl. 71-110.000.

Acker, William F., to Honeywell Information Systems, Inc. Precision variable gain amplifier with linear log-gain versus control-voltage characteristic. 3,736,520, Cl. 330-29.000.

Acker, William F.; and Bremer, Gordon F., to Honeywell Information Systems, Inc. Voltage controlled oscillator. 3,736,528, Cl. 331-143.000.

Ackerman, Francis R., to Addressograph-Multigraph Corporation. Travelling cylinder printer with means for locking the platin and associated handle in retracted position. 3,735,701, Cl. 101-269.000.

Ackermann, Josef: *See—*
Detterbeck, Heinrich; Ackermann, Josef; and Schmalzgruber, Bruno, 3,735,750.

Adams, Carlton D. Regenerating desiccator. 3,735,563, Cl. 55-179.000.

Addie, Albert N.; and Freitag, Glenn W., to General Motors Corporation. Engine exhaust turbine inlet screen. 3,735,587, Cl. 60-13.00r.

Addressograph-Multigraph Corporation: *See—*
Ackerman, Francis R., 3,735,701.

Adey, George R.; and Souder, Wilmer, Jr., to Denton Plastic Products Corporation. Apparatus for continuously making pearlescent plastic sheeting. 3,736,090, Cl. 425-224.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Hamelin, Andre; Paulus, Max; and Guillaud, Charles, 3,736,106.

Agfa-Gevaert Aktiengesellschaft: *See—*
Danhauser, Justus; and Marx, Paul, 3,736,136.
Winkler, Alfred, 3,735,679.

A.I.C. Approvirgionamenti Industriali Chemici S.p.A.: *See—*
Vaglio, Renzo, 3,736,108.

Air Products & Chemicals, Inc.: *See—*
Uffner, Melville Willard, 3,736,164.

Air Products and Chemicals, Inc., mesne: *See—*
Weintraus, Lester, 3,736,240.

Airco, Inc.: *See—*
Tibbetts, Alan R.; and Tucker, Donald R., 3,735,465.

Aisin Seiki Kabushiki Kaisha: *See—*
Ono, Hiroyuki, 3,736,003.

Akeley, Lloyd T., to Beckman Instruments, Inc. Gauge pressure transmitter with interchangeable range elements and rupture protection. 3,735,639, Cl. 73-398.00r.

Akima, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Power steering apparatus for a vehicle. 3,735,832, Cl. 180-79.20r.

Akins, Lee R. Reboring tool for brake spiders. 3,736,067, Cl. 408-79.000.

Akzona Incorporated, mesne: *See—*
Abramitis, Walter W.; Ducey, Steven C.; and Atherton, James O., 3,736,112.

Alden Research Foundation: *See—*
Simpkins, Frederick W.; and Bliudnikas, Ernest, 3,736,594.

Alexanderson, Ernst F. W. Adjustable speed motor control system. 3,736,481, Cl. 318-331.000.

Alexeev, Evgeny Stepanovich: *See—*
Fedotov, Alexandr Mikhailovich; Alexeev, Evgeny Stepanovich; Denisov, Genrikh Alexandrovich; Rundkvist, Konstantin Alexandrovich; and Skrunde, Artur Avgustovich, 3,735,868.

All-Steel Equipment Inc.: *See—*
Powell, James C., 3,735,653.

Allen, John W., to Stanray Corporation. Chain and strut coupler uncoupling device. 3,735,878, Cl. 213-162.000.

Allen, William T. Multiple axis work head-with dual in the line work spindles as disclosed. 3,735,459, Cl. 29-26.000.

Allen-Bradley Company: *See—*
Ford, David E.; and Waltz, Richard W., 3,736,470.

Allied Chemical Corporation: *See—*
Lipscomb, Walter Peter; and Turner, Garland Linwood, 3,736,211.

Allington, Robert W., to Instrumentation Specialties Company, Inc. Short wavelength fluorescent light source. 3,736,427, Cl. 250-71.00r.

Allis-Chalmers Corporation: *See—*
Comfort, Samuel T., 3,735,885.
Condra, James, 3,735,509.
Hartwig, Walter J., 3,735,858.

Allmanna Svenska Elektriska Aktiebolaget: *See—*
Bergman, Carl; and Larsson, Paul, 3,736,360.
Karlsson, Karl Gosta, 3,735,799.

Almasi, George S.; and Keefe, George E., to International Business Machines Corporation. Magnetoresistive sensing of bubble domains with noise suppression. 3,736,419, Cl. 340-174.0eb.

Alphonse, Gerard Argant, to RCA Corporation. Apparatus for efficiently converting acoustic energy into electrical energy. 3,736,533, Cl. 333-30.000.

Altair Scientifics, Inc.: *See—*
Mayo, Marvin J., 3,735,534.
Mayo, Marvin J., 3,736,060.

Aluminum Company of America: *See—*
Gayner, Herbert; and Smith, David A., 3,735,893.
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American Can Company: *See—*
Badavas, Charles Arthur; Landry, Raymond William; and Piltzecker, John William, 3,735,905.
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Giliham, Helen Currier; Sherr, Allan Ellis; and Klein, Harvey Gerald, 3,736,349.
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American Home Products Corporation: *See—*
Freed, Meier E.; and Freed, Elisabeth Hertz, 3,736,324.
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Amsted Industries Incorporated: *See—*
Bossong, Raymond J., 3,735,877.
Germain, Andrew Gerald; and Wiles, Donald Ray, 3,735,796.
Waller, Gustav Martin, 3,735,535.

Ancewicz, Walter J.; and Marsh, Orville H. Semi-portable swimming pool. 3,735,427, Cl. 4-172.190.

Anderson, Albin R.; Grenier, Robert P.; and Perri, Peter R., to Western Electric Company, Incorporated. Methods of and apparatus for inspecting crystal. 3,736,426, Cl. 250-51.500.

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Anderson, Marvin H. Filter system. 3,735,872, Cl. 210-167.000.

Anderson, Roy H. Saw chain. 3,735,662, Cl. 83-830.000.

Andis Clipper Co.: *See—*
Reynolds, Raymond B., 3,735,488.

Andrew, Frederick Lyle: *See—*
Fetter, Edward Joseph; and Andrew, Frederick Lyle, 3,736,282.

Andrews, Edward N., Sr. Tool holder with angle-index. 3,735,461, Cl. 29-98.000.

Andvari Incorporated: *See—*
Krumme, John Frederick; and Ford, Donald Thomas, 3,735,728.

Angstadt, John W.: *See—*
Wright, Edward S.; and Angstadt, John W., 3,736,182.

Aono, Shigeo; and Nambu, Shyuya, to Nissan Motor Company, Limited. Engine overrun preventing device for internal combustion engine. 3,735,742, Cl. 123-102.000.

Apple, Myron L.; and Hughes, Harold W., to Bendix Corporation, The. Positive retained actuation switch. 3,736,393, Cl. 200-82.00d.

Application des Gaz: *See—*
Remane, Roger, 3,735,903.

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A.P.V. Company Limited, The: *See—*
Burberry, Robin Keith; and White, Robert Anthony, 3,735,793.

Archibald, Robert S. Lid support. 3,735,890, Cl. 217-61.000.

Arendt, Ronald H., to General Electric Company. Ceramic articles and method of sealing ceramics. 3,736,222, Cl. 161-182.000.

A.R.F. Products, Incorporated: *See—*
Brynk, George, 3,736,557.

Argus Chemical Corporation: *See—*
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Armco Steel Corporation: *See—*
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Armenakas, Anthony E., to United States of America, Navy. Ultrasonic delay lines. 3,736,532, Cl. 333-30.00r.

Armstrong Cork Company: *See—*
Boylan, Joseph W., 3,736,012.

Arrington, Thomas B.; and Moody, Leonard A., to Universal Oil Products Company. Method of and apparatus for continuously casting a hollow billet. 3,735,803, Cl. 164-281.000.

Arth, Glen E.; and Rasmusson, Gary H., to Merck & Co., Inc. 2,2-Dimethyl-6,7 alpha-difluoromethylene-2 0-spirox-4-ene--ones or 3-ols and acyl esters thereof. 3,736,317, Cl. 260-239.55r.

Artis-Way Manufacturing Company Incorporated: *See—*
Bradley, Richard S., 3,735,932.

Asaki Kasei Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Hidehiko; Sasaguri, Kiichiro; Komoto, Hiroshi; Kawashima, Sukeo; and Kohno, Mitsuo, 3,736,294.

Asano, Kiyozi, to Shinsei Kogyo Co., Ltd. Racetrack amusement device. 3,735,984, Cl. 273-86.00e.

Asder, John K. Bird frightening device. 3,735,514, Cl. 40-39.000.

Ashe, Harry, to United States of America, Air Force. High voltage transformer. 3,736,542, Cl. 336-70.000.

Asizawa, Naohito; and Kono, Motomi, to Asizawa Tekko Kabushiki Kaisha. Spray drying method and apparatus for producing granular particles from stock liquids of solids. 3,735,792, Cl. 159-4.0cc.

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Astrum, Nils Osten, to Devac AB. Arrangements in and relating to a chiselling hammer or similar percussion machine. 3,735,824, Cl. 175-213.000.

Atherton, James O.: *See—*
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Atomic Power Development Associates, Inc.: *See—*
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Auriemma, Nicholas A., to Universal Oil Products Company. Brake locking and release system. 3,735,841, Cl. 188-5.000.

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Baugher, Dale Milton; and Awkward, Kenneth Walter, 3,736,469.

Ayling, Robert W., to Cardinal Compressor Corporation. Compressor lubrication system. 3,736,076, Cl. 417-372.000.

Azzalin, Bruno; and Bertina, Domenico, to Olivetti, Ing., C., & C., S.p.A. Printing device for calculating machines. 3,735,921, Cl. 235-58.00p.

Babcock & Wilcox Company, The: *See—*
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Harvey, Donald M.; and Babcock, David L., 3,735,676.

Bachman, James L.; and Martin, Robert M., to Coors Porcelain Company. Electroless nickel plating process. 3,736,167, Cl. 117-37.00r.

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Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Wick, Kurt; and Holl, Norbert, 3,736,082.
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Baessler, Lee R.; Valiensi, Adelbert W.; and Glassner, Harvey F., to Humetrics Corporation. Physiologic function simulator. 3,736,363, Cl. 35-17.000.

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Baker Oil Tools, Inc.: *See—*
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Balaev, Oleg Gavrilovich; Ediny, Jury Grigorievich; and Korol, Nikolai Akimovich. Instrument for crushing stones in urinary bladder. 3,735,764, Cl. 128-328.000.

Ballard, Clifford L.: *See—*
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Ballard, John L.: *See—*
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Ballard, Lee N.: *See—*
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Bannett, Roger J.; and Hall, Roland S., Jr., to United States of America, Navy. Dual mode guidance and control system for a homing missile. 3,735,944, Cl. 244-3.150.

Barba, Diego; Liuzzo, Giuseppe; Tagliafferri, Giovanni; and Germana, Antonino, to Societa Italiana Resine S.p.A. Heat-exchanger for desalting sea water. 3,735,808, Cl. 165- 069.000.

Barbier, Maurice, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Seismic exploration. 3,736,554, Cl. 340-7.00r.

Barjavel, Jean. Underwater compressed-gas gun. 3,735,747, Cl. 124-11.00a.

Bark, Nils-Eric G.; and Kordas, Karl, to International Harvester Company. Method of securing separator in clutch disc. 3,735,474, Cl. 29-451.000.

Barker, Allan; and Perks, Maurice Arthur, to United Kingdom Atomic Energy Authority. Liquid cooled nuclear reactor core. 3,736,225, Cl. 176-40.000.

Barker, Frank: *See—*
Constant, Paul C., Jr.; Hodge, Walter; Barker, Frank; and Keller, Edward S., 3,735,513.

Barnes, Hamilton Nigel, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Vehicle braking systems. 3,735,844, Cl. 188-181.00t.

Barnett, J. Sterling: *See—*
Felder, John W., Jr.; and Barnett, J. Sterling, 3,736,215.

Barr, Frederick J., Jr., to Petty Geophysical Engineering Company. Method and apparatus for increasing seismic signal-to-noise ratio. 3,736,556, Cl. 340-15.5ec.

Barrere, John A., Jr.: *See—*
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Barrow, Gilbert C., to Massa Division Dynamics Corporation of America. Electroacoustic transducers. 3,736,555, Cl. 340-8.000.

Barry, Michael L.: *See—*
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Barton, Gary I.: *See—*
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Basch, Robert, Fernsehanlagen G.m.b.H.: *See—*
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Basso, Eugenio; Gulino, Giacomo; and Veronese, Antonio, to Fabbrica Italiana Magneti Marelli S.P.A. Electronic device for controlling a silicon controlled recifier in a capacitor discharge electronic ignition circuit. 3,736,463, Cl. 315-209.0sc.

Basso, Jude A.; Fulger, Charles V.; and Thompson, Joseph J., to Kellogg Company. Beverage containing egg albumen and amino acid. 3,736,150, Cl. 99-78.000.

Bauer, Und Kurt: *See—*
Deutscher, Hans-Christian; and Bauer, Und Kurt, 3,735,443.

Baugher, Dale Milton; and Awkward, Kenneth Walter, to RCA Corporation. Switching regulator overload protection circuit. 3,736,469, Cl. 317-22.000.

Bausch & Lomb Incorporated: *See—*
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Rains, Stephen D., 3,736,100.

Bautz, Josef, GmbH: *See—*
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Baxter Laboratories, Inc.: *See—*
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Bayer Aktiengesellschaft: *See—*
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Meckel, Walter; and Muller, Erwin, 3,736,350.

Bayer, Theodore H.; Beaman, David W.; and Tower, Dell K., to United States of America, Navy, mesne. Firing device for limpet mine. 3,735,703, Cl. 102-16.000.

Beam, Paul E., Jr.; Hunt, Albert L., Jr.; and Spears, Esten W., Jr., to General Motors Corporation. Turbine stator cooling control. 3,736,069, Cl. 415-115.000.

Beaman, David W.: *See—*
Bayer, Theodore H.; Beaman, David W.; and Tower, Dell K., 3,735,703.

Beck, Clark H., to Nortec Electronics Corporation. Automatic liquid bubbler. 3,735,568, Cl. 55-256.000.

Beckinger, Gunter; Goullon, Hannes; Wiest, Gerhard; Wehrend, Klaus; and Kiessling, Hans-Albrecht, to Siemens Aktiengesellschaft. Program control unit for a digital data processing installation. 3,736,563, Cl. 340-172.500.

Beckman Instruments, Inc.: *See—*
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Becton, Dickinson & Company: *See—*
Eckhart, Edgar U., 3,735,864.

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Begg, Geoffrey S.; and Jacobson, Nils Bertil, to Medinova AB. Pipetting device. 3,736,099, Cl. 23-259.000.

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Benson, Carl I. Jr., to Paragon Gears Incorporated. Reversible power transmission. 3,735,644, Cl. 74-355.000.

Berenbaum, Morris Benjamin; Pachuta, John Michael; and Sorg, Earl Harry. Curable polysulfide polymers. 3,736,301, Cl. 260-79.000.

Berg, Lloyd; and Malsam, John S., to United States of America, Interior. Catalytic hydrogenation using a KCl-$ZnCl_2$ molten salt mixture as a catalyst. 3,736,250, Cl. 208-10.000.

Bergen, Stephen Archbold; and Dubsky, Hanniel Elidad, to Pye Limited. Chromatographic column. 3,735,570, Cl. 55-386.000.

Berger, Horst H.; and Wiedmann, Siegried K., to International Business Machines Corporation. Monolithic semiconductor circuit for a logic circuit concept of high packing density. 3,736,477, Cl. 317-235.00r.

Berger, Milton: *See—*
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Bergman, Carl; and Larsson, Paul, to Allmanna Svenska Elektriska Aktiebolaget. Control system for vacuum furnaces. 3,736,360, Cl. 13-24.000.

Bergstedt, Karl Erik, to Sunds Aktiebolag. Apparatus for screening aqueous suspensions, preferably fibre stock and/or fibre-pulp suspensions. 3,735,873, Cl. 210-415.000.

Berkowitz, Ami E.; and Meiklejohn, William H., to General Electric Company. Liquid identification using magnetic particles having a preselected curie temperature. 3,736,500, Cl. 324-34.00r.

Berlincourt, Don A.; and Sliker, Lawrence S., to Vernitron Corporation, mesne. Piezoelectric transformer. 3,736,446, Cl. 310-8.000.

Berndt, Carl W., to United States of America, Atomic Energy Commission. Graphics display system. 3,736,411, Cl. 235-151.000.

Berner, Warren E., to General Electric Company. Substrate supported semiconductive stack. 3,736,475, Cl. 317-234.00r.

Bernett, Frank E., to Tile Council of America, Inc. Methods for grouting tile. 3,735,545, Cl. 52-744.000.

Berney, Jean-Claude, to Golay, Bernard, S.A. Hairspring assembly for oscillator. 3,735,586, Cl. 58-114.000.

Berryman, William O., to Baker Oil Tools, Inc. Down-hole adjustable hydraulic fishing jar. 3,735,827, Cl. 175-296.000.

Berryman, William O., to Baker Oil Tools, Inc. Accelerator for fishing jars. 3,735,828, Cl. 175-299.000.

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Bese, Andras: *See—*
Benedek, Gyorgy; Buday, Andras; and Bese, Andras, 3,735,925.

Betts, Max William: *See—*
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Biagioni, Margherita: *See—*
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Bilek, Zdenek: *See—*
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Billett, Eric Harold; and Miller, David, to Beecham Group Limited. Substituted alkenoic acids and esters and salts thereof. 3,736,347, Cl. 260-469.000.

Billi, G., & C., S.p.A.: *See—*
Billi, Giorgio, 3,735,608.

Billi, Giorgio, to Billi, G., & C., S.p.A. Yarn tensioning device for circular knitting machines and the like. 3,735,608, Cl. 66-125.00r.

Bink, Werner R.; and Dempster, George, to Sherritt Gordon Mines Limited. Diverting and sampling gate. 3,735,641, Cl. 73-423.00r.

Binks, Chester; and Herbert, Ronald M., to Restaurant Technology, Inc. Bun steam injector. 3,735,749, Cl. 126-20.000.

Bird, Martin George, to Eastman Kodak Company. Apparatus for coating a continuous web. 3,735,729, Cl. 118-50.000.

Bisko, Joseph P., 30% to Bradley, John Christopher and 30% to McIntire, Edward A. Filter jacket for cooking oil. 3,735,871, Cl. 210-167.000.

Bjornerud, Egil K.; and Keister, Glenn L., to Applied Technology Corporation. Method for the production of stable water fogs using an emulsified water-evaporation retarding chemical mixture. 3,736,261, Cl. 252-305.000.

Black Clawson Company, The: *See—*
Marsh, Paul G., 3,736,223.

Black, George W. Golf ball retrieving apparatus. 3,735,934, Cl. 242-54.00r.

Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, to Smith Kline & French Laboratories Limited. Isothioureas. 3,736,331, Cl. 260-309.000.

Blackledge, Keith; and Rushton, Harold, to British Layland Truck and Bus Division Limited. Motor vehicle suspensions. 3,735,999, Cl. 280-124.00f.

Blake, Kenneth Sidney: *See—*
Shreeve. Nicholas Gilbert; and Blake, Kenneth Sidney, 3,736,053.

Blanchard, David I.: *See—*
Knowiden, Gary L.; and Blanchard, David I., 3,736,061.

Blandford, Kenneth George. Method of providing a terminal on an electric storage battery. 3,736,191, Cl. 136-135.00s.

Blatt, Leland F. Push/pull plunger clamp with take up for wear. 3,735,972, Cl. 269-228.000.

Blaw-Knox Food and Chemical Equipment, Inc.: *See—*
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Blieske, Herbert: *See—*
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Bliudnikas, Ernest: *See—*
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Blount, Frederick T.; Geller, Henry A.; Moore, Richard D.; Leung, Howard; Lewis, Scott C.; and Redmond, Joseph M., to International Business Machines Corporation. Resistor sensing bit switch. 3,736,573, Cl. 340-173.00r.

Blue Channel Corporation, The: *See—*
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Blum, Raymond T., to Bausch & Lomb Incorporated. Apparatus for and method of edge machining flexible contact lenses. 3,736,115, Cl. 51-284.000.

Blundell, Roger William: *See—*
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Bobo, Jean-Claude; and Dubois, Andre, to Campagnie Generale d'Electricite. Cryogenic cable. 3,736,365, Cl. 174-15.00c.

Bobst, Gerhard, to Von Roll AG. Hydrostatic reversible drive. 3,735,590, Cl. 60-468.000.

Bode, Charles H., Jr.; and Wrhen, Wilmer C., to United States Steel Corporation. Idler roll mounting construction. 3,735,848, Cl. 193-35.00r.

Boehringer Mannheim GmbH: *See*—
Winter, Werner; Thiel, Max; Stach, Kurt; Schmidt, Felix Helmut; and Stork, Harald, 3,736,334.

Boettcher, William A. Flooring spacers. 3,735,497, Cl. 33-180.00r.

Bogachev, Vladimir Petrovich: *See*—
Nikolaev, Vasily Ilich; Eliseev, Alexandr Jurievich; Bogachev, Vladimir Petrovich; Prosvirin, Artem Petrovich; Konstantinopolsky, Vladimir Tonovich; and Belousov, Anatoly Nikolaevich, 3,735,912.

Bogaert, Pierre Emmanuel, to Vic Chemicals, Inc. Device for opening a skylight. 3,735,530, Cl. 49-7.000.

Bogel, George F.: *See*—
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Bohner, Hans; and Schmidt-Hatting, Wolfgang, to Swiss Aluminium Ltd. Electrolytic cells for the production of aluminum. 3,736,244, Cl. 204-243.00r.

Bolgep, Bernard J.: *See*—
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Bollsterling, Manfred: *See*—
Schuhknecht, Wolfgang; and Bollsterling, Manfred, 3,736,059.

Bolum, Donald R., to A-T-O Inc., mesne. High contrast filter for visual displays down-converting otherwise blocked radiation. 3,736,050, Cl. 350-316.000.

Bom, Cornells Johannes Gerardus: *See*—
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Bonanos, Peter: *See*—
File, Joseph; Mills, Robert G.; Sheffield, George V.; and Bonanos, Peter, 3,736,539.

Bond Stores, Incorporated: *See*—
Parillo, Vincent, 3,735,875.

Bondonio, Ernesto. Automatic toilet installation. 3,735,429, Cl. 4-213.000.

Bone, Arnold R.: *See*—
Kinney, John E.; and Bone, Arnold R., 3,735,908.

Borg-Warner Corporation: *See*—
Roberts, Richard W., 3,735,646.

Bosch, Hans Albert, to Quaker Oats Company, The. Continuous mixer. 3,735,960, Cl. 259-8.000.

Bosch, Robert, GmbH: *See*—
Hahner, Reinhard; and Schmid, Wolfgang, 3,735,821.
Runge, Detlev; and Gotz, Werner, 3,736,435.
Steegmuller, Helmut, 3,735,990.
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Bosley, Denis V.: *See*—
Staats, William A.; and Bosley, Denis V., 3,735,524.

Bossong, Raymond J., to Amsted Industries Incorporated. Railway coupler head. 3,735,877, Cl. 213-75.00r.

Bottcher, Rolf, to VEB Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Stack forming and handling machine. 3,735,695, Cl. 100-7.000.

Bourgeois, Louis: *See*—
Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,736,269.
Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,736,270.

Bouricius, Willard G.; Jessep, Donald C., Jr.; Carter, William C.; and Wadia, Aspi B., to International Business Machines Corporation. System for controlling power consumption in a computer. 3,736,569, Cl. 340-172.500.

Bowen, Robert J.: *See*—
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Bower, Richard, to E. H. Research Laboratories, Inc. Computer core handler. 3,735,866, Cl. 209-73.000.

Bowers, David L.; and Mohalski, John E., to General Electric Company. Optional unipolar-bipolar body organ stimulator. 3,735,766, Cl. 128-419.00p.

Bowman, Brian, to British Steel Corporation. Electric furnace. 3,736,359, Cl. 13-9.000.

Bowman, Cadet E.; and Hayward, Frank, to Olin Corporation. Integral regulated hand torch. 3,736,093, Cl. 431-89.000.

Bowmar Instrument Corporation: *See*—
Harden, Phillip L., 3,736,588.

Boyan, Edwin A., to Program Control Corporation. Management system and method. 3,736,409, Cl. 235-61.60r.

Boylan, Joseph W., to Armstrong Cork Company. Connection joint for a concealed ceiling suspension system. 3,736,012, Cl. 287-189.36a.

Bracke, William J. I., to Labofina S.A. Acylation of pyrazole containing polymers. 3,736,297, Cl. 260-77.50c.

Bradley, John Christopher: *See*—
Bisko, Joseph P., 3,735,871.

Bradley, Richard S., to Artis-Way Manufacturing Company Incorporated. System for overcoming transport-particle-flow deficiencies inherent in feed grinding and mixing machines using dust collectors for the grinder. 3,735,932, Cl. 241-60.000.

Branson Instruments, Incorporated: *See*—
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Braun Aktiengesellschaft: *See*—
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Braun, Edwin Julius; and Romero, Roderic, to Bell Telephone Laboratories, Incorporated. Serially content addressable memory controlled call forwarding system. 3,736,382, Cl. 179-18.0be.

Braun, Helmut F.: *See*—
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Brauninger, Arno: *See*—
Frommeld, Hans-Dieter; Scheler, Siegfried; and Brauninger, Arno, 3,736,143.

Breckenfelder, Ernst G., to UIP Engineered Products Corporation. Automatic nailing apparatus. 3,735,909, Cl. 227-86.000.

Breikss, Ivars P., to Honeywell Inc. High density digital recording. 3,736,581, Cl. 340-174.10a.

Breinin, Irwin A.: *See*—
Palmer, Donald J.; Palmer, Mark L.; and Breinin, Irwin A., 3,735,988.

Breitenstein, Charles T.: *See*—
Umbdenstock, Walter; and Breitenstein, Charles T., 3,736,113.

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Acker, William F.; and Bremer, Gordon F., 3,736,528.

Bretschneider, Erich, to SIEMAG Siegener Maschinenbau Gesellschaft mit beschrankter Haftung. Rolling mill. 3,735,617, Cl. 72-78.000.

Brewer, Thomas Howard; and Blundell, Roger William, to Littlejohn, Sidney R., & Co., Ltd. Camera systems. 3,735,686, Cl. 95-44.00r.

Briggs & Stratton Corporation: *See*—
Gumtow, Herbert A., 3,735,494.

Briggs, Bill N., to United States of America, Army, mesne. Alloy steel. 3,736,129, Cl. 75-128.00w.

Brigham, Emerson W.; La Branche, Harvey W.; Nash, Alan W. B.; Newman, Howard F.; See, Thomas E.; and Smith, Marjorie Ann M., to Mattel, Inc. Looped traffic accessory. 3,735,923, Cl. 238-10.00e.

Brimer, C. M.: *See*—
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Brinkmann, Heinz Ulrich: *See*—
Graham, Leslie Wilfred; Voice, Eric Handley; and Brinkmann, Heinz Ulrich, 3,736,169.

British Layland Truck and Bus Division Limited: *See*—
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British Steel Corporation: *See*—
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Brod, Ilya Iosifovich: *See*—
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Broek, Johannes Bernardus, to Plastofold A.G. Support for suspending a curtain. 3,735,795, Cl. 160-348.000.

Brother Kogyo Kabushiki Kaisha: *See*—
Watanabe, Tomoyoshi, 3,735,850.

Brothers, Charles Dale: *See*—
St. Onge, Daniel A., 3,735,834.

Brough, Denys William; and Gibbons, Douglas, to Scragg, Ernest, & Sons Limited. Textile apparatus with braking arrangement. 3,735,577, Cl. 57-89.000.

Broun Boveri-Sulzer Turbomaschinen Aktiengesellschaft: *See*—
Moser, Paul; and Zaba, Tadeusz, 3,735,811.

Brown Company: *See*—
Buttery, Kenneth T., 3,735,916.

Brown, Gordon P.; and McClarke, Andrew V., to Eastman Kodak Company. Reel for web material. 3,735,941, Cl. 242-68.300.

Brown, Milton T.; and Bilek, Zdenek, to DCA Educational Products, Inc. Modular display assembly. 3,736,035, Cl. 312-107.000.

Brown, Ronald D.; and Stark, Marvin L., to Armco Steel Corporation. Water quench method and apparatus. 3,735,967, Cl. 266-3.00r.

Brownell, Roy D.; and Rogers, Richard E., to Clark Equipment Company, mesne. Crane controls. 3,735,876, Cl. 212-39.00r.

Bruck, Joseph: *See*—
Glass, Marvin I.; Bruck, Joseph; and Race, Andras, 3,735,986.

Brucken, Byron L., to General Motors Corporation. Electromagnetic spring-wound clutch. 3,735,847, Cl. 192-35.000.

Brudy, Otto H.: *See*—
Brudy, Peter E.; and Brudy, Otto H., 3,735,744.

Brudy, Peter E.; and Brudy, Otto H. Intake manifold fuel system. 3,735,744, Cl. 123-141.000.

Bruning, Armin M.: *See*—
De Corso, Serafino M.; and Bruning, Armin M., 3,736,358.

Brusaglino, Giampiero, to Fiat Societa per Azioni. Battery powered electric traction system. 3,736,482, Cl. 318-338.000.

Brusov, Lev Petrovich; Vasilevsky, Dmitry Pavlovich; Dorokhov, Vasily Ivanovich; and Onoprienko, Vasily Petrovich. Method of thermal and chemical treatment of finely-divided materials. 3,735,969, Cl. 266-24.000.

Bryan, Graham W.; and Green, David T., to United States Surgical Corporation. Instrument for ligating suturing and dividing organic tubular strutures. 3,735,762, Cl. 128-305.000.

Brynk, George, to A.R.F. Products, Incorporated. Acoustic locator with array of microphones. 3,736,557, Cl. 340-16.00r.

Bryson, Charles E., Jr.; and Barton, Gary I., to Emerson Electric Co. Electric heaters. 3,736,405, Cl. 219-210.000.

Buchan, Norman S.; and Dias, Gil M., to United States of America, Army. Water and oil-resistant, antistatic and abrasion resistant finish for nylon fabrics. 3,736,177, Cl. 117-138.80n.

Buchanan Electrical Products Corporation: *See*—
Obuch, Edward A.; and Waddington, William T., 3,735,784.
Waddington, William T., 3,735,448.

Buck, Charles Edward; and Sheaffer, Victor Earl, to Colgate-Palmolive Company. Cleaning compositions and method. 3,736,259, Cl. 252-89.000.

Buckler, Sheldon A.; Kennedy, David P.; and Norland, Kenneth S., to Polaroid Corporation. Container for film units and flash illumination devices. 3,735,680, Cl. 95-11.001.

Bucyrus-Erie Company: *See*—
Talley, Robert E., 3,735,829.
Talley, Robert E., 3,735,830.

Buday, Andras: *See*—
Benedek, Gyorgy; Buday, Andras; and Bese, Andras, 3,735,925.

Budge, William W., to Pacific Mariculture, Inc. Method and package for storing and shipping oyster larvae. 3,735,737, Cl. 119-4.000.

Bunker Ramo Corporation: *See*—
Lotan, Amram Zvi; and Jen, Israel Dixson Teh-Chao, 3,736,567.

Bunn-O-Matic Corporation: *See*—
Martin, John C., 3,736,155.

Burberry, Robin Keith; and White, Robert Anthony, to A.P.V. Company Limited, The. Plate evaporators. 3,735,793, Cl. 159-28.00p.

Burdette, George W., to United States of America, Navy. Gelled hydrazine containing rocket fuel. 3,736,195, Cl. 146-36.000.

Burke, Alun, to Contraves AG. Level feeler. 3,735,636, Cl. 73-290.00r.

Burke Concrete Accessories, Inc.: *See*—
Hunter, Phillip S., 3,736,013.

Burkhardt, Max, to Concast AG. Continuous casting mold. 3,735,801, Cl. 164-273.000.

Burkhart, James A., to United States of America, National Aeronautics and Space Administration. Magneto-plasma-dynamic arc thruster. 3,735,591, Cl. 60-202.000.

Burlington Industries, Inc.: *See*—
Pugh, Charles D., 3,736,473.

Burnet, Robert C.; and Slack, William F., to Van Dyk Research Corporation. Apparatus for imparting intermittent rotation to a first member in rotating registry with a second member. 3,736,056, Cl. 355-8.000.

Burney, Charles F., 1/2 to Keneally, John. Method and means for treating filaments of hair, or the like. 3,735,768, Cl. 132-9.000.

Burroughs, Elvin O. Releasable hook means for securing log loads. 3,735,452, Cl. 24-68.0cd.

Burton, Earl F.: *See*—
Mosshart, Crockett; Burton, Earl F.; and Mackhem, Walter C., 3,736,032.

Burtton, Hollis E. Perforating apparatus. 3,735,659, Cl. 83-524.000.

Bush, Henry J.; Entzminger, John N., Jr.; and Richard, Walter R., to United States of America, Air Force. Coherent frequency hopped, phase modulated acoustic surface wave generator. 3,736,587, Cl. 340-351.000.

Butler Manufacturing Company: *See*—
Stephenson, Fred J., 3,735,596.

Butler, William. Automatic breading machine. 3,735,726, Cl. 118-24.000.

Buttery, Kenneth T., to Brown Company. Ice cream carton having readily removable divider and support means. 3,735,916, Cl. 229-27.00r.

Butula, Ivan, to PLIUA Pharmaceutical and Chemical Works. Method for the preparation of 4,5,6,7-tetrahydroindazoles. 3,736,332, Cl. 260-370.00r.

Byrd, Roy Thomas, to SVT, Inc., mesne. Shin guard. 3,735,419, Cl. 2-22.000.

Cacciamani, Eugene R., Jr.: *See*—
Wolljaza, Chester J., Jr.; and Cacciamani, Eugene R., Jr., 3,736,507.

Cale, Roland E., to Schaefer Equipment Company. Upsetting dies. 3,735,626, Cl. 72-318.000.

Cali, Joseph A.: *See*—
Trageser, James H.; and Cali, Joseph A., 3,736,559.

California Institute of Technology: *See*—
Miller, Charles G.; and Bartera, Ralph E., 3,736,453.

Calkin, Edwin Theodore; Hamilton, Billy Harold; and La Porta, Frank Carl, to Bell Telephone Laboratories, Incorporated. Switching regulator with high efficiency turnoff loss reduction network. 3,736,495, Cl. 323-17.000.

Camelon, Melville J.; Peng, Stephen C.; and Thomson, David M., to Ford Motor Company. Stable nonaqueous compositions capable of forming thermosetting films. 3,736,279, Cl. 260-21.000.

Campagnie Generale d'Electricite: *See*—
Bobo, Jean-Claude; and Dubois, Andre, 3,736,365.

Campbell, James Samuel. Disposal machine for cuttings or the like. 3,735,933, Cl. 241-236.000.

Canada Wire and Cable Company Limited: *See*—
Crowne, Francis Raymond; and Peer, Vladimir, 3,736,276.

Canadian Limited: *See*—
Huvers, Marius E., 3,735,945.

Canadian Patents & Development Limited: *See*—
Mieligan, Larry P.; Robblee, Alexander R.; Wood, John C.; and Chakrabartty, Sujit K., 3,736,146.

Capgras, Rene, to Industrial Development Company. Automobile suspension. 3,736,000, Cl. 280-124.00f.

Capgras, Rene. Automobile suspension. 3,736,001, Cl. 280-124.00f.

Carborundum Company, The: *See*—
Laliwala, Jitendra R., 3,735,566.
Long, William W., III, 3,735,532.

Cardinal Compressor Corporation: *See*—
Ayling, Robert W., 3,736,076.

Carleton, John T., to Du Pont de Nemours, E. I., and Company. Vacuum coating method. 3,736,175, Cl. 117-107.100.

Carpenter, Charles W., to Hercules Incorporated. Apparatus for making pile fabric. 3,736,209, Cl. 156-435.000.

Carpenter, Robert D.; and Roman, Ronald J., to Union Carbide Corporation. Cyclone particle separator. 3,735,869, Cl. 209-211.000.

Carrier Corporation: *See*—
Wellman, Donald C., 3,735,560.

Carter, William C.: *See*—
Bouricius, Willard G.; Jessep, Donald C., Jr.; Carter, William C.; and Wadia, Aspi B., 3,736,569.

Caruel, Jacques E. J.; Casteilant, Jean-Pierre J. E.; Coutor, Simone; and Jean-Baptiste, Armand, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Walls of combustion chambers. 3,735,589, Cl. 60-39.650.

Castellant, Jean-Pierre J. E.: *See*—
Caruel, Jacques E. J.; Castellant, Jean-Pierre J. E.; Coutor, Simone; and Jean-Baptiste, Armand, 3,735,589.

Catlos, Peter V., to Ferplas Industries Limited. Twine. 3,735,579, Cl. 57-155.000.

Cavaterra, Enrico: *See*—
Croci, Mauro; and Cavaterra, Enrico, 3,736,355.

Caviar, Lee. Timing device with adjustable cam operated microswitch assembly. 3,736,391, Cl. 200-38.00r.

Cecere, Andrew P., to Samcoe Holding Corporation. Sealing device for vacuum extractor. 3,735,444, Cl. 15-307.000.

Cecil, Thomas F., II; and Davidge, Ronald V., to International Business Machines Corporation. Corona discharge device. 3,736,424, Cl. 250-49.5zc.

Celanese Corporation: *See*—
Gump, Klaus Hannes; and Stuetz, Dagobert Engelbert, 3,736,309.
Gump, Klaus Hannes; and Stuetz, Dagobert Engelbert, 3,736,310.
Patella, Ralph F., 3,736,287.

Centre Nationale d'Etudes Spatiales: *See*—
Fayet, Philippe, 3,735,943.
Palz, Wolfgang, 3,735,942.

Centre Technique du Cuir: *See*—
Pillard, Claude, 3,735,611.

Cezkoslovenska akademie ved: *See*—
Chvalovsky, Vaclav; Mach, Lumir; and Machova, Helena, 3,736,162.

Chaffee, Edwin George, to Litton Systems, Inc. Planar-shielded meander slow-wave structure. 3,736,534, Cl. 333-031.00r.

Chafin, James M.; and Padovani, Henry R., to Textron Inc. Heet notching means. 3,735,439, Cl. 12-42.00r.

Chakrabartty, Sujit K.: *See*—
Mieligan, Larry P.; Robblee, Alexander R.; Wood, John C.; and Chakrabartty, Sujit K., 3,736,146.

Chamberlain, William H. Chamberlain, Anna B.: *See*—
Deike, Robert F., 3,735,822.

Chang, Hsu, to International Business Machines Corporation. Domain transfer between adjacent magnetic chips. 3,736,577, Cl. 340-174.0tf.

Channin, Donald Jones; and Hammer, Jacob Meyer, to RCA Corporation. Unitized internally-modulated gas laser. 3,736,525, Cl. 331-94.500.

Chauvin, Yves, to Institut Francais du Petrole des Carburants et Lubrifiants and Societe Nationale des Petroles d'Aquitaine. Catalyst composition and the process for polymerizing unsaturated hydrocarbons using this composition. 3,736,264, Cl. 252-429.00r.

Chen, James C.: *See*—
Dworschack, Robert G.; Chen, James C.; Lamm, William R.; and Davis, Larry G., 3,736,232.

Chenoweth, David V., to Baker Oil Tools, Inc. Differential gas lift valve apparatus. 3,735,774, Cl. 137-155.000.

Chernow, Fred, to Iplama A.G. Screen for ion implantation. 3,736,425, Cl. 250-49.50t.

Chia, Enrique C.; Ward, George C.; and Lenaeus, George E. Casting machine with low profile conveyor. 3,735,802, Cl. 164-278.000.

Chiba, Jiro; and Kanazaki, Tadaaki, to Tokyo Seimitsu Sokki Kabushiki Kaisha. Play back-machine control (position information storage and reproduction device). 3,736,580, Cl. 340-174.10j.

Childs, Elbert B., to Mobil Oil Corporation. System for monitoring a fluid stream. 3,736,431, Cl. 250-205.000.

Chizhov, Leonid Vladimirovich; Lengauer, Dmitry Emelyanovich; and Danilin, Sergei Alexandrovich. Apparatus for injecting a sample into a gas chromatograph. 3,735,640, Cl. 73-422.0gc.

Churchill, John P.; and Thompson, Tommy Lewis, to Life Support, Inc. Oxygen generator cell. 3,736,104, Cl. 23-281.000.

Chvalovsky, Vaclav; Mach, Lumir; and Machova, Helena, to Cezkoslovenska akademie ved. Cements containing mineral fibers of high corrosion resistance. 3,736,162, Cl. 106-99.000.

Ciba-Geigy Corporation: *See*—
Kleiner, Eduard K., 3,736,300.

Ciccotelli, Luciano: *See*—
Ferrari, Arch Renzo; and Ciccotelli, Luciano, 3,735,548.

Ciliberti, Frank, to Mallory, P. R., & Co., Inc. Locking device for battery sticks. 3,736,189, Cl. 136-132.000.

Clark Equipment Company, mesne: *See*—
Brownell, Roy D.; and Rogers, Richard E., 3,735,876.

Clements, John W. Electrical connector. 3,736,549, Cl. 339-75.0mp.

Clerbois, Lucien: *See*—
Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,736,269.
Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,736,270.

Clinical Sciences, Inc.: *See*—
Markovits, Arthur L.; and Wolfson, Stanley W., 3,736,042.

Clinton, Russell M.; Condron, James A.; and Mator, Richard T., to Gulf Research & Development Company. Vapor-over-liquid temperature analyzer. 3,735,634, Cl. 73-64.200.

CMI Corporation: *See*—
Swisher, George W., Jr.; Smith, Don W.; and Spivey, Gordon L., 3,735,818.

Coca-Cola Company, The: *See*—
Iacobucci, Guillermo Arturo; Myers, Dirck Van Buren; and Okubo, Kazuyoshi, 3,736,147.

Codina, Jorge G. Gyroscopic reference system. 3,736,033, Cl. 308-10.000.

Cogar Corporation: *See*—
Tu, George K., 3,736,572.

Cogger, John F.: *See*—
Unfried, Happy H.; and Cogger, John F., 3,735,707.

COHEL-Compagnie d'Horlogerie et Electronique S.A.: *See*—
Nava, Riccardo Giuseppe; Romani, Giorgio Augusto; Soffientini, Duccio Riccardo; Subert, Aldo Rodolfo; Ubertazzi, Alessandro Giuseppe; and Vetter, Peter Roman, 3,735,580.

Cohen, Mitchell S.; and Moore, John S., to Micro-Bit Corporation. Conductor-insulator-semiconductor capacitor memory having increased storage capability. 3,736,571, Cl. 340-173.0cr.

Coherent Radiation: *See*—
Mefferd, Wayne S.; and Gates, Wendall C., 3,736,402.

Coleman, H. Paris, to United States of America, Navy. Multiple beam retrodirective array with circular symmetry. 3,736,592, Cl. 343-854.000.

Coleman, Kenneth W.; Peltz, John R.; and Stoldt, Clayton L., to GTE Sylvania Incorporated. Multiple conductor continuity and short circuit testing device. 3,736,503, Cl. 324-51.000.

Colgate-Palmolive Company: *See*—
Buck, Charles Edward; and Sheaffer, Victor Earl, 3,736,259.
Iundermann, Werner Otto, 3,735,918.

Collier, Susan Starr; Gilman, Paul Brewster, Jr.; Linschitz, Henry; and Raleigh, Ronald George, to Eastman Kodak Company. Unfogged, primitive, silver halide emulsions containing desensitizing amounts of optical sensitizing dyes and the use thereof in reveral processes. 3,736,140, Cl. 96-64.000.

Collins Radio Company: *See*—
Griffin, Ronald G., 3,736,506.

Collura, Peter C.; and Desmond, John D., to Container Corporation of America. Sift-proof dispensing carton. 3,735,914, Cl. 229-17.00r.

Columbia Broadcasting System, Inc.: *See*—
Rutherford, Robert E., Jr., 3,736,460.

Combustion Engineering Inc.: *See*—
Micheller, Rudolph J.; and Patterson, Robert C., 3,735,569.
Mitchell, Robert Davis, 3,736,083.
Mitchell, Robert Davis, 3,736,084.
Mitchell, Robert Davis, 3,736,085.

Comfort, Samuel T., to Allis-Chalmers Corporation. Sideloader lift truck with powered deck and carriage rollers. 3,735,885, Cl. 214-520.000.

Commercial Solvents Corporation: *See*—
Gay, Gordon M., 3,736,196.

Communications Patents Limited: *See*—
Gargini, Eric J., 3,736,374.

Communications Satellite Corporation: *See*—
Wolljsza, Chester J., Jr.; and Cacciamani, Eugene R., Jr., 3,736,507.

Computer Test Corporation: *See*—
Major, James M.; Truscello, Peter J.; and Provasnik, Robert, 3,736,499.

Concast AG: *See*—
Burkhardt, Max, 3,735,801.

Condra, James, to Allis-Chalmers Corporation. Elevator support adjustment for elevating scraper. 3,735,509, Cl. 37-8.000.

Condron, James A.: *See*—
Clinton, Russell M.; Condron, James A.; and Mator, Richard T., 3,735,634.

Conlee, George D. Motorized overhead door opener. 3,736,483, Cl. 318-469.000.

Conner, James M.; and Salvador, Henry J., to Polaroid Corporation. Photographic apparatus for motion picture projection. 3,736,051, Cl. 352-72.000.

Constant, Paul C., Jr.; Hodge, Walter; Barker, Frank; and Keller, Edward S., to Fedderson, Don, Productions, Inc. Dynamic advertising display system. 3,735,513, Cl. 40-32.000.

Constantinescu, Dorin; Cruceanu, Sever; Spataru, Eugen; and Mereanu, Nicolae, to IPCUP Institutul de Proiectari si Cercetari Pentru Utilaj Petrolier. Sealed bearing with hydrostatic pressure balancing for core barrels. 3,735,826, Cl. 175-228.000.

Container Corporation of America: *See*—
Collura, Peter C.; and Desmond, John D., 3,735,914.

Continental Can Company Inc.: *See*—
Fitko, Chester W., 3,736,284.

Continental Oil Company: *See*—
Kennedy, Carl D.; and Lundeen, Allan J., 3,736,352.

Continental Oil Company, mesne: *See*—
Nakazato, Susumu, 3,736,227.

Contraves AG: *See*—
Burke, Alun, 3,735,636.

Cook, Gordon Henry; and Merigold, Peter Arnold, to Rank Organisation Limited, The. Optical objectives of variable equivalent focal length. 3,736,048, Cl. 350-186.000.

Cook, Harold D.; and Davis, Owen F., to Teletype Corporation. Stepping motor drive circuit. 3,736,487, Cl. 318-696.000.

Cook, John Daniel: *See*—
Godfrey, Leonard Robert; and Cook, John Daniel, 3,735,510.

Cooke, Alf, Limited: *See*—
Haddock, George, 3,735,674.

Coopman, Frans, to N.V. Bekaert S.A. Apparatus and method for winding wire on coils. 3,735,938, Cl. 242-83.000.

Coors Porcelain Company: *See*—
Bachman, James L.; and Martin, Robert M., 3,736,167.

Cornelius, Kenneth T., to United States of America, Navy. Pressure actuated release device. 3,736,014, Cl. 292-256.500.

Cosden Oil & Chemical Company: *See*—
Swann, Jimmie R., 3,735,658.

Coughlan, Edward H., to Polaroid Corporation. Reflex camera with means to reduce mirror rebound. 3,735,684, Cl. 95-42.000.

Coughran, Samuel J., Jr., to Lome Industries, Incorporated. Tree harvesting apparatus. 3,735,788, Cl. 144-309.0ac.

Courteulds Limited: *See*—
Flavell, John; Betts, Max William; and Robinson, Frank, 3,735,812.

Coutor, Simone: *See*—
Caruel, Jacques E. J.; Castellant, Jean-Pierre J. E.; Coutor, Simone; and Jean-Baptiste, Armand, 3,735,589.

Cowell, Harold E., Sr. Musician's pick. 3,735,663, Cl. 84-322.000.

Crachy, Rudolf; and Jacoby, Hans, to Werkzeugmaschinenfabrik Gildemeister & Comp., Aktiengesellschaft. Bearing, centering and indexing means for the spindle carriers of multiple spindle machines. 3,735,460, Cl. 29-48.500.

Craig, Fred A.: *See*—
Ross, Lee F.; Wilkinson, James E.; Craig, Fred A.; and Hudson, Allan M., 3,736,089.

Crawford, Cullen B. Tube coupling. 3,736,008, Cl. 285-342.000.

Crawford Fitting Company: *See*—
Dodge, Harry G., 3,735,621.

Crites, Roger C., to Mc Donnell Douglas Corporation. Electret pressure transducer. 3,736,436, Cl. 307-88.0et.

Croci, Angelo: *See*—
Croci, Mauro; and Cavaterra, Enrico, 3,736,355.

Croci, Mauro; deceased (by Croci, Angelo; and Biagioni, Margherita; heirs); and Cavaterra, Enrico, to Montecatini Edison S.p.A. Process for the preparation of unsaturated acids. 3,736,355, Cl. 260-533.00n.

Croom, Hardy C., to Owens-Illinois, Inc. System for removing color from paper mill liquid waste. 3,736,254, Cl. 210-51.000.

Cross, Edward Albert; McCoy, Frederick Charles; and Schlicht, Raymond Charles, to Texaco Inc. Nitrite containing corrosion-inhibiting grease compositions. 3,736,256, Cl. 252-18.000.

Crowne, Francis Raymond; and Peer, Vladimir, to Canada Wire and Cable Company Limited. Electrocoating bath compositions. 3,736,276, Cl. 260-19.0ep.

Cruceanu, Sever: *See*—
Constantinescu, Dorin; Cruceanu, Sever; Spataru, Eugen; and Mereanu, Nicolae, 3,735,826.

Cubberly, Walter E., Jr., to Schlumberger Technology Corporation. Data-signaling apparatus for well drilling tools. 3,736,558, Cl. 340-18.0cd.

Cubic Corporation: *See*—
Rogers, Laurence B.; Neumann, Malcolm A.; and Dolan, Dwain K., 3,736,403.

Cude, Leion. Magnetic casket seal assembly. 3,735,456, Cl. 27-17.000.

Cullen, Glenn Wherry; Bolin, Stephen Ray; Morrison, Andrew David; and Wang, Chih Chun, to RCA Corporation. Czochralski-grown spinel for use as expitaxial silicon substrate. 3,736,158, Cl. 106-42.000.

Cullen, Patrick: *See*—
Karter, Jesse; and Cullen, Patrick, 3,735,492.

Cullen, William F.; Holub, Fred F.; and Mc Cormick, Michael R., to General Electric Company. Radiation shielded electron discharge device. 3,736,457, Cl. 313-313.000.

Cunningham Corporation: *See*—
Munn, Sumner T., 3,736,509.

Curington, Alfred R., to Baker Oil Tools, Inc. Bore hole air hammer. 3,735,820, Cl. 173-78.000.

Curtis, Willard S.: *See*—
Kerr, David; and Curtis, Willard S., 3,735,955.

Curtiss-Wright Corporation: *See*—
Moskowitz, Seymour; and Horvath, Joseph A., 3,735,588.
Moskowitz, Seymour; and Leto, Anthony, 3,736,070.

Cushing, Charles J.; Schwind, Kurt C.; and Vander Neut, Richard D., to Philco-Ford Corporation. Radiation sensitive means for detecting optical flaws in glass. 3,736,065, Cl. 356-239.000.

Cushman Industries, Incorporated: *See*—
Smithson, Grodon W., 3,735,670.

Cute, James A.: *See—*
Gregorian, Razmic S.; Kirk, Charles C.; and Cute, James A., 3,736,218.

Cutillo, Louis J.: *See—*
Kreten, Bernhard; and Cutillo, Louis J., 3,735,432.

Cyprus Metallurgical Processes Corporation: *See—*
Kruesi, Paul R.; and Goens, Duane N., 3,736,238.

Czumber, Frank E.: *See—*
Wiltshire, Arthur J.; Ranallo, Henry U.; and Czumber, Frank E., 3,736,086.

Dahl, Henry A.: *See—*
Keur, Robert L; and Dahl, Henry A., 3,736,593.

Dahlstrom Corporation: *See—*
Pfund, Alvin F., 3,735,539.

Dainichi-Nippon Cables, Ltd.: *See—*
Okada, Masaaki; Takemori, Hayashi; Kita, Toshio; Nakai, Toshiaki; Ohtsuji, Nasaaki; Fujiwara, Yasuhiro; Tamura, Shoji; and Morita, Koji, 3,736,173.

Dane, Ernest Blaney, Jr. Hoist piping for deep-sea mineral slurry. 3,736,077, Cl. 417-424.000.

Danfoss A/S Nordborg: *See—*
Graversen, Niels P. G.; and Sorensen, Carl, 3,735,776.

Danhauser, Justus; and Marx, Paul, to Agfa-Gevaert Aktiengesellschaft. Dye diffusion transfer process for the production of positive color photographic images. 3,736,136, Cl. 96-3.000.

Danilin, Sergei Alexandrovich: *See—*
Chizhov, Leonid Vladimirovich; Lengauer, Dmitry Emelyanovich; and Danilin, Sergei Alexandrovich, 3,735,640.

Danno, Mitsuaki: *See—*
Ohno, Eiichi; Danno, Mitsuaki; Yamazaki, Eizo; Ohkawa, Kiyoto; and Watanabe, Osamu, 3,736,063.

Darling, Alan Sydney; and Selman, Gordon Leslie, to Johnson, Matthey & Co., Limited. Method of coating refactory metals for protection at high temperatures and resulting article. 3,736,109, Cl. 29-195.000.

Darrow, John O. G., to Westinghouse Air Brake Company. Fail-safe electronic comparator circuit. 3,736,434, Cl. 307-235.00r.

Dart Industries, Inc.: *See—*
Schrage, Albert, 3,736,266.

Dashew, Stephen S.; and Wills, Arnold, to La Mesa Industries, Inc., mesne. Concrete beam forms. 3,735,953, Cl. 249-28.000.

Data Packaging Corporation: *See—*
Mathus, Gregory, 3,736,036.

Dattilo, Donald J., to Motorola, Inc. Cartridge locking mechanism with adjustable tension means. 3,735,989, Cl. 274-4.00b.

Davidge, Ronald V.: *See—*
Cecil, Thomas F., II; and Davidge, Ronald V., 3,736,424.

Davidge, Ronald V.; Hobgood, George W., Jr.; Queener, Carl A.; Spears, Jesse W.; and Thompson, Bernard G., to International Business Machines Corporation. Reproduction apparatus incorporating alternate redevelopment and reimaging cycles for multiple copies 3,736,055, Cl. 355-14.000.

Davies, Robert L.: *See—*
Fox, Richard W.; and Davies, Robert L., 3,736,466.

Davis, Donald A.: *See—*
Rosenthal, Louis A.; and Davis, Donald A., 3,736,492.
Rosenthal, Louis A.; and Davis, Donald A., 3,736,493.
Rosenthal, Louis A.; and Davis, Donald A., 3,736,494.

Davis, Forrest Wm.; and Seitz, Lamont J., to Baxter Laboratories, Inc. Diagnostic unit. 3,736,433, Cl. 250-218.00r.

Davis, Larry G.: *See—*
Dworschack, Robert G.; Chen, James C.; Lamm, William R.; and Davis, Larry G., 3,736,232.

Davis, Owen F.: *See—*
Cook, Harold D.; and Davis, Owen F., 3,736,487.

Davis, Richard P. Ice and snow removal machine. 3,736,028, Cl. 299-25.000.

Davydov, Vladimir Sergeevich: *See—*
Prostorov, Igor Semenovich; and Davydov, Vladimir Sergeevich, 3,735,992.

Day, John J.; and Zajac, Jaroslav, to Gulf Research & Development Company. Method for increasing the mobility of waxy crude oils. 3,735,770, Cl. 137-13.000.

Dayger, Jonas E.; Drejza, John E.; and Moneagle, Otto F., to International Business Machines Corporation. Front-back printer. 3,735,696, Cl. 101-93.00c.

DCA Educational Products, Inc.: *See—*
Brown, Milton T.; and Bilek, Zdenek, 3,736,035.

De Angelis, Peter; Morris, Alfred R.; and Mac Millan, Alan L., to Sobin Chlor-Alkali, Inc. Process and apparatus for removing mercury from waste water. 3,736,253, Cl. 210-27.000.

De Cadenet, Jean-Jacques; Gueussier, Andre; and Tricot, Roland, to Pechiney Ugine Kuhlmann. Stainless steel with a high boron content. 3,736,128, Cl. 75-126.00p.

De Corso, Serafino M.; and Bruning, Armin M., to Westinghouse Electric Corporation. Process for iron ore reduction and electric furnace for iron ore reduction having at least one nonconsumable electrode. 3,736,358, Cl. 13-9.000.

De Gier, Nico Arie; and Van Der Kooij, Simon, to U.S. Philips Corporation. Dip lacquering of electrical components. 3,736,179, Cl. 117-201.000.

De Groff, Mark E.: *See—*
Richards, Joseph M.; and De Groff, Mark E., 3,735,756.

de Haas, Frank; and Miller, Dean E. Falling breech block action for a single shot firearm. 3,735,517, Cl. 42-23.000.

De Tommaso, Gabriel L.: *See—*
Scott, Joseph David; and De Tommaso, Gabriel L., 3,736,286.

De Zeeuw, John R.; and Tynan, Edward J., III, to Pfizer Inc. Fermentation process for the production of D-mannitol. 3,736,229, Cl. 195-28.00r.

Decker, Harold D. Hand loading press for field use or the like. 3,735,666, Cl. 86-24.000.

Dederer, Robert: *See—*
Vanderhoof, Frank B.; and Dederer, Robert, 3,735,867.

Dedona, Francis A.; and Lucas, James W., to Scionics Business Products, Inc., mesne. Card cover sheet aperturing apparatus. 3,735,655, Cl. 83-140.000.

Deering Milliken Research Corporation: *See—*
Pearce, Larry N., 3,735,609.
Shortte, Willard H., Jr., 3,735,441.

Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, to Solvay & Cie. Solid compound of rhodium and tellurium and manufacturing process therefor. 3,736,269, Cl. 252-518.000.

Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, to Solvay & Cie. Solid compound of rhodium and tungsten and manufacturing process therefor. 3,736,270, Cl. 252-518.000.

Deike, Robert F., 1/4 each to Chamberlain, William H. Chamberlain, Anna B. Manually actuated jack hammer. 3,735,822, Cl. 173-118.000.

Delano, Richard; and Raseman, Chad J. Method to prevent condensate accumulation on a surface. 3,736,172, Cl. 117-95.000.

Delin, Per Staffan; Ekstrom, Bertil Ake; Nathorst-Westfelt, Lars Solve; Sjoberg, Berndt Olof Harald; and Thelin, Karl Hugo. Process for producing 6-aminopencillanic acid. 3,736,230, Cl. 195-36.00p.

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Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Isoxazolopyridine carboxylic acids and esters. 3,736,326, Cl. 260-295.50b.

Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Isoxazolopyridine ketone derivatives. 3,736,327, Cl. 260-296.00h.

D'Ercole, Anthony C.; and Schwardt, David N., to Eastman Kodak Company. Web separating device. 3,735,936, Cl. 242-71.100.

Derderian, Edward J. Article handling machine. 3,735,552, Cl. 53-63.000.

Deribas, Andrei Andreevich; Kudinov, Vladimir Mikhailovich; Matveenkov, Felix Iovich; Oksak, Vladimir Ivanovich; Simonov, Valery Alexandrovich; and Ostapenko, Nikolai Gerasimovich; deceased (by Ivanova, Klara Mikhailovna; and Ostapenko, Alexei Nikolaevich;administrators). Method of manufacturing components with cavities by explosive welding of metal blanks. 3,735,476, Cl. 29-470.100.

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Deutscher, Hans-Christian; and Bauer, Und Kurt, to SWF Spezialfabrik fuer Autozubehoer Gustav Rau GmbH. Windshield wiper blade construction. 3,735,443, Cl. 15-250.360.

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Dey, Arabinda N.; and Holmes, Robert W., to Mallory, P. R., & Co., Inc. Hermetically sealed structures for organic electrolyte systems. 3,736,190, Cl. 136-133.000.

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Diamond, Martin J.; and Needles, Howard L. Acryloxyacyl chlorides. 3,736,341, Cl. 260-405.000.

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Dietsch, Kurt Arne; and Van Opdorp, Petrus Franciscus Philippus, to Telefonaktiebaget L M Ericsson. Armature assembly for an electromagnetic relay. 3,736,537, Cl. 335-135.000.
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Dille, Alfred; and Thamm, Udo, to Hansel, Otto, GmbH, Firma. Apparatus for insertion of sweet parts, in particular of pralines, in wrapping cases. 3,735,556, Cl. 53-240.000.
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Double, Richard L. Electrical coupler. 3,736,548, Cl. 339-31.00r.
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Duggar, Anderson, Jr. Valve. 3,735,957, Cl. 251-330.000.
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Eisler, Paul. Combined demisting and defrosting heating panel for windows and other transparent areas. 3,736,404, Cl. 219-203.000.
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Formax, Inc.: *See—*
Richards, Louis R.; and Lekan, Henry N., 3,735,694.
Formica Corporation: *See—*
Shah, Bipin Manubahi, 3,736,220.
Forsdale, Joan Rosengren. Operator response analysis means and method. 3,735,499, Cl. 35-8.00r.
Forseth, Glenn J.: *See—*
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Foseco International Limited: *See—*
Jeanneret, Jean Louis, 3,735,797.
Foss, Gunter G., to Free-Flowing Packaging Corporation. Dispensing hopper. 3,735,915, Cl. 229-17.00b.
Foster, James P.; and Soloway, Samuel B., to Shell Oil Company. Thienyl alkyl tin compounds. 3,736,333, Cl. 260-329.0me.
Foster, L. B., Company: *See—*
Porter, Milton; Kearns, Warren; Washek, Conrad; and Lambert, Paul, 3,735,478.
Fox, Gerard J. Lock means for a firearm. 3,735,519, Cl. 42-70.00d.
Fox, Richard W.; and Davies, Robert L., to General Electric Company. Non-arcing switch system and process. 3,736,466, Cl. 317-11.00a.
Francel, Josef; and Mansur, Fred E., to Owens-Illinois, Inc. Composition, articles prepared therefrom and method of preparing such articles. 3,736,176, Cl. 117-124.00a.
Francois, Joseph Jean: *See—*
Refouvelet, Joseph-Paul-Marie; and Francois, Joseph Jean, 3,736,545.
Frank, Carl W.: *See—*
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Freed, Elisabeth Hertz: *See—*
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Freed, Marvin J. Motor-actuated toys. 3,735,525, Cl. 46-202.000.
Freed, Meier E.; and Freed, Elisabeth Hertz, to American Home Products Corporation. 4,5 Dihydro 1H[1,4]diazipino[1,2a]indole 2(3H) carboxamides. 3,736,324, Cl. 260-293.590.
Freilino, Ray S.: *See—*
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Freitag, Glenn W.: *See—*
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Fritz, James S.; and Millen, William G., to United States of America, Atomic Energy Commission. Gold recovery from aequous solutions. 3,736,126, Cl. 75-118.000.
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Frommeld, Hans-Dieter; Scheler, Siegfried; and Brauninger, Arno, to Keuffel & Esser Company, mesne. Light-sensitive diazonium compounds and diazotype materials. 3,736,143, Cl. 96-91.00r.
Fry, Francis J.: *See—*
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Fuel Equipment Co., Inc.: *See—*
Leatherby, Vincent C., 3,736,095.
Fuji Denki Seizo Kabushiki Kaisha: *See—*
Nitta, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, 3,736,440.
Fuji Photo Film Co., Ltd.: *See—*
Nagae, Tadashi; Shimada, Takeo; and Suzuki, Keiichi, 3,736,144.
Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuiti; Ogawa, Satoshi; and Mishima, Shizuo, 3,736,168.
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Fujiwara, Katsuji. Combination air vent-vacuum breaker. 3,735,922, Cl. 236-66.000.
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GAF Corporation: *See—*
Karustis, George A., Jr., 3,736,320.
Gaglione, John P.: *See—*
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Galbraith, Floyd M., Jr., to Eastman Kodak Company. Film advance and metering mechanism. 3,735,681, Cl. 95-31.0fm.
Ganellin, Charon Robin: *See—*
Black, James Whyte; Durant, Graham John; Emmett, John Colin; and Ganellin, Charon Robin, 3,736,331.
Gardner, William H.; and Graham, Donald H., to Hercules Incorporated. Process and apparatus for the complete reclamation of valuable products from solid waste. 3,736,111, Cl. 48-111.000.
Gargini, Eric J., to Communications Patents Limited. Wired broadcasting systems. 3,736,374, Cl. 178-6.000.
Garnier, Michel. Driving of fluids. 3,735,778, Cl. 137-604.000.
Garvey, C. Godfrey; and McCoy, Harry Paul. Lock guard for trailer doors. 3,736,016, Cl. 292-281.000.
Gates, Peter Stuart; and Gillon, John, to Fissons Limited. Benzodioxale derivatives useful as pesticides. 3,736,338, Cl. 260-340.500.
Gates, Wendall C.: *See—*
Mefferd, Wayne S.; and Gates, Wendall C., 3,736,402.
Gaugh, Wilbur S.: *See—*
Mee, John D.; Heseltine, Donald W.; and Gaugh, Wilbur S., 3,736,321.
Gay, Gordon M., to Commercial Solvents Corporation. Preparation of explosive nitric ester gels. 3,736,196, Cl. 149-48.000.
Gaylord, Paul E. Combined blow gun and darts. 3,735,748, Cl. 124-12.000.
Gayner, Herbert; and Smith, David A., to Aluminum Company of America. Shielded container wall opening. 3,735,893, Cl. 220-54.000.
Gebele, Josef: *See—*
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Gelber, Robert M.; and Small, Edward A., Jr., to Optical Coating Laboratory, Inc. Liquid crystal display device with internal anti-reflecting coatings. 3,736,047, Cl. 350-160.0lc.
Gelfman, Stan: *See—*
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Genge, Ulrich, to Demag Aktiengesellschaft. Method and apparatus for equalizing the gas pressures of sluice chambers and furnace zones of shaft furnaces, particularly blast furnaces. 3,735,970, Cl. 266-27.000.

Georg, Klaus Helmut; and Mascher, Werner Herbert. Respirators. 3,735,571, Cl. 55-372.000.

George, Lawrence C.; Ballard, Lee N.; and Feeler, Vernon H., to United States of America, Interior. Neutralization of metal containing wastes. 3,736,239, Cl. 204-108.000.

Gerber Garment Technology: *See—*
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Gereth, Reinhard: *See—*
Fischer, Horst; Gereth, Reinhard; and Kreuzer, Karl-Heinz, 3,736,180.

Gerfin, Jay N. Electronic card game machine. 3,735,982, Cl. 273-1.00e.

Germain, Andrew Gerald; and Wiles, Donald Ray, to Amsted Industries Incorporated. Permanent mold risering. 3,735,796, Cl. 164-23.000.

Germana, Antonino: *See—*
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Gersbach, John Edwin, to International Business Machines Corporation. Pseudo-hierarchy memory system. 3,736,574, Cl. 340-173.00r.

Gertsch AG: *See—*
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Gertsch, Ernst; and Gertsch, Ulrich, to Gertsch AG. Ski boot having a stiffening sleeve. 3,735,508, Cl. 36-2.5al.

Gertsch, Ulrich: *See—*
Gertsch, Ernst; and Gertsch, Ulrich, 3,735,508.

Ghassemi, Masood; Recht, Howard L.; and Kleber, Eugene V., to North American Rockwell Corporation. Water decolorization. 3,736,255, Cl. 210-45.000.

Ghirga, Marcello: *See—*
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Gibbons, Douglas: *See—*
Brough, Denys William; and Gibbons, Douglas, 3,735,577.

Gibson, Earl D., to North American Rockwell Corporation. Automatic decision threshold adjustment. 3,736,511, Cl. 325-321.000.

Gibson, James O.; Schumacher, Robert L.; and Myler, Kay L., to McDonnell Douglas Corporation. Composites having low thermal expansion. 3,736,159, Cl. 106-56.000.

Gierth, Volker: *See—*
Kinkel, Klaus; Pfannmueller, Helmut; Schmidt-Thomee, Georg; Metzner, Franz Georg; and Gierth, Volker, 3,736,305.

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Spiegel, Jacob; Miller, Albert; and Klukoff, Irving (said Miller and said Klukoff assors. to), 3,736,400.

Gilby, Anthony C.; and Gaglione, John P., to Wilks Scientific Corporation. Enrichment of chromatograph output. 3,735,565, Cl. 55-197.000.

Giliham, Helen Currier; Sherr, Allan Ellis; and Klein, Harvey Gerald, to American Cyanamid Company. Flame-retardant agents for thermoplastic products. 3,736,349, Cl. 260-486.00r.

Gillemot, George W.: *See—*
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Thompson, John T.; and Gillemot, George W., 3,736,388.

Gillette Company, The: *See—*
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Glass, Marvin, Associates: *See—*
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Glass, Marvin I.; Bruck, Joseph; and Race, Andras, to Glass, Marvin, Associates. Board game apparatus. 3,735,986, Cl. 273-134.00g.

Glassmeyer, John J., to Pullman Incorporated. Cargo transporting device. 3,735,713, Cl. 108-53.000.

Glassner, Harvey F.: *See—*
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Gleasman, Vernon E. Synclinal gearing. 3,735,647, Cl. 74-715.000.

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Glor, Paul R.; and Drelich, Arthur H., to Johnson & Johnson. Process employing aqueous media in the treatment of fibrous materials. 3,736,097, Cl. 8-131.000.

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Degueldre, Louis; Gobillon, Yves; Clerbois, Lucien; and Bourgeois, Louis, 3,736,270.

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Godfrey, Leonard Robert; and Cook, John Daniel, to Dendix Brushes Limited. Device for removing snow. 3,735,510, Cl. 37-43.00r.

Goens, Duane N.: *See—*
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Gofton, Ross H.; Koh, John K.; Newton, Edmund A.; and Saunders, David R., to Ford Motor Company. Louver assembly. 3,735,691, Cl. 98-121.000.

Golay, Bernard, S.A.: *See—*
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Goldstein, Barry, to Stagg Zipper Corporation. Zipper stringer. 3,735,454, Cl. 24-205.130.

Goodwin, Alan. Lighting systems for road vehicles. 3,736,416, Cl. 240-46.210.

Goodyear Tire & Rubber Company, The: *See—*
McKissick, Lance R.; and Kolowski, Michael A., 3,735,791.

Gores, Kenneth W., to Products Research & Chemical Corporation. Dual ingredient storage, intermixing and dispensing storage. 3,735,900, Cl. 222-145.000.

Gosselink, Donald W.; and Horne, Einar D., to Minnesota Mining and Manufacturing Company. Humidity resistant photoconductive compositions. 3,736,134, Cl. 96-1.800.

Gosselink, Eugene Paul; and Henderson, John H., to Procter & Gamble Company, The. Process for production of mellitic acid. 3,736,353, Cl. 260-523.00a.

Gottstein, Norbert: *See—*
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Gotz, Werner: *See—*
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Gough, Arthur; and Tompsett, Alan John, to Imperiil Chemical Industries Limited. Plasticising composition. 3,736,348, Cl. 260-475.00r.

Gould, Reginald J., to North American Rockwell Corporation. Detector probe for mapping discontinuities in electromagnetic paths. 3,736,541, Cl. 336-84.000.

Goullon, Hannes: *See—*
Beckinger, Gunter; Goullon, Hannes; Wiest, Gerhard; Wehrend, Klaus; and Kiessling, Hans-Albrecht, 3,736,563.

Gowan, Richard L., to United States of America, Navy. Non-interfering on-line communication receiver test system. 3,736,512, Cl. 325-363.000.

Grace, W. R., & Co.: *See—*
Eburn, William H., Jr., 3,735,627.
Gregorian, Razmic S.; Kirk, Charles C.; and Cute, James A., 3,736,218.

Graeff, Norwood Claude: *See—*
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Graf, Ernest, to Kahn, Ben, Furs Corporation. Fur skin hand mitten. 3,735,421, Cl. 2-158.000.

Graham, Donald H.: *See—*
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Graham, Leslie Wilfred; Voice, Eric Handley; and Brinkmann, Heinz Ulrich, to United Kingdom Atomic Energy Authority. Pyrolytic deposition process for applying a multi-layer coating to a nuclear fuel kernel. 3,736,169, Cl. 117-46.0cg.

Grandin, Daniel, to Fives Lille-Cail. Dock crane. 3,735,879, Cl. 214-14.000.

Granger, Edward H., to Phillips, F. C., Incorporated. Athletic shoe spike anchor plate. 3,735,507, Cl. 36-59.00r.

Grant, John Milton. Method of making photocells. 3,736,207, Cl. 156-294.000.

Grasenick, Fritz. Apparatus for the preparation and treatment of thin layers. 3,736,246, Cl. 204-298.000.

Graversen, Niels P. G.; and Sorensen, Carl; deceased (by Sorensen, Inger Vorre; administratrix), to Danfoss A/S Nordborg. Valve for a heating element. 3,735,776, Cl. 137-359.000.

Gray, Gary W. Article transporting device. 3,735,831, Cl. 180-19.00r.

Gray Manufacturing Company, Inc.: *See—*
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Grayson, Martin; and Farley, Charles Edward, to American Cyanamid Company. Catalyzed oxygen bleaching. 3,736,224, Cl. 162-65.000.

Green, David T.: *See—*
Bryan, Graham W.; and Green, David T., 3,735,762.

Green, Leon K. Trailer frame construction. 3,735,998, Cl. 280-106.00t.

Greenleaf, Jack W., to Everett Sound Machine Works, Inc. Wheeled ladder with a weight actuated self-locking wheel thereon. 3,735,838, Cl. 182-15.000.

Gregorian, Razmic S.; Kirk, Charles C.; and Cute, James A., to Grace, W. R., & Co. Shrinkable permeable texture film. 3,736,218, Cl. 161-164.000.

Grenchus, Paul P.: *See—*
Abraham, Dennis G.; Grenchus, Paul P.; and Mc Sparran, Ray A., 3,736,488.

Grenier, Robert P.: *See—*
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Griffin & Company: *See—*
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Griffin, Ronald G., to Collins Radio Company. Method of testing integrated circuits. 3,736,506, Cl. 324-158.00r.

Grivas, John C., to Sherwin-Williams Company, The. Fungicidal compositions and methods of prohibiting the growth thereof. 3,736,280, Cl. 260-22.00a.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Axle with independent wheels. 3,736,002, Cl. 280-124.00f.

Groswith, Charles T., III: *See*—
Abildgaard, William H.; Groswith, Charles T., III; and Melgaard, Hans L., 3,736,200.

GTE Automatic Electric Laboratories, Incorporated: *See*—
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GTE Sylvania Incorporated: *See*—
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Gueussier, Andre: *See*—
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Day, John J.; and Zajac, Jaroslav, 3,735,770.
Dowdell, Stewart Harold; and Pachaly, Robert W., 3,735,600.
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Gullasch, Jurgen: *See*—
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Gump, Klaus Hannes; and Stuetz, Dagobert Engelbert, to Celanese Corporation. Production of dihydropyridacene polymers which are free of inter-molecular cross-linking. 3,736,309, Cl. 260-88.70r.

Gump, Klaus Hannes; and Stuetz, Dagobert Engelbert, to Celanese Corporation. Process for producing dihydropyridacene polymers which are free of inter-molecular cross-linking. 3,736,310, Cl. 260-88.70r.

Gumtow, Herbert A., to Briggs & Stratton Corporation. Dip stick normally housed in curved filler tube. 3,735,494, Cl. 33-126.70r.

Gurev, Harold S.; and Kirk, Ralph W., to Motorola, Inc. Non-corrosive coating for thin aluminum metallization. 3,735,484, Cl. 29-588.000.

Gustafson, Richard N.: *See*—
Anderson, David W.; Gustafson, Richard N.; Johnson, Lance H.; Sparacio, Francis J.; Tomas, William M.; and Webster, James J., 3,736,566.

Guy, Arthur L., to Esso Production Research Corporation. Hinge system for offshore structure. 3,735,597, Cl. 61-46.500.

Haag, Herman: *See*—
Shadd, Daniel; and Haag, Herman, 3,736,380.

Haberstump, Alfred H.: *See*—
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Hacias, Kenneth J., to Oxy Metal Finishing Corporation. Electroless copper tin plating solution and process. 3,736,157, Cl. 106-1.000.

Hackett, Kenneth R.; and Goble, Ralph W., to Sontrix, Inc. Motion detector and intruder alarm system. 3,736,584, Cl. 340-258.00a.

Haddock, George, 1/2 to Cooke, Alf, Limited. Formation of creases in board in or for the manufacture of carton blanks. 3,735,674, Cl. 93-58.00r.

Hahner, Reinhard; and Schmid, Wolfgang, to Bosch, Robert, GmbH. Transmission means for use in torque and impulse transmitting machines. 3,735,821, Cl. 173-104.000.

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Benedek, Gyorgy; Buday, Andras; and Bese, Andras, 3,735,925.

Haken, Pieter Ten, to Shell Oil Company. Biocidally active carboxamide derivatives. 3,736,330, Cl. 260-306.80r.

Halasa, Adel F., to Firestone Tire & Rubber Company, The. Process for polymerizing conjugated diene monomers. 3,736,312, Cl. 260-94.20t.

Hale, Thomas E., to General Electric Company. Coated cemented carbide product. 3,736,107, Cl. 29-182.700.

Hall, Roland S., Jr.: *See*—
Bannett, Roger J.; and Hall, Roland S., Jr., 3,735,944.

Haller, Clayton L., to Westinghouse Electric Corporation. Door lock for laundry apparatus. 3,735,610, Cl. 68-12.00r.

Haller, John, to Federal-Mogul Corporation. Method of making a fluid-conducting hot-forging die. 3,735,648, Cl. 76-107.00a.

Hallerback, Stig Lennart. Methods for the manufacture of bearing supports for electric rotary machines. 3,735,462, Cl. 29-148.40r.

Hamelin, Andre; Paulus, Max; and Guillaud, Charles, to Agence Nationale de Valoriation de la Recherche (ANVAR). Process for flux crystallizing ferrites, spinels and garnets from 1% melt mixture. 3,736,106, Cl. 23-300.000.

Hamilton, Billy Harold: *See*—
Calkin, Edwin Theodore; Hamilton, Billy Harold; and La Porta, Frank Carl, 3,736,495.

Hamilton, Clark B., to Dunham-Bush, Inc. Liquid refrigerant feed control. 3,735,603, Cl. 62-210.000.

Hamling, Bernard H., to Union Carbide Corporation. Fibrous zirconia cement composites. 3,736,160, Cl. 106-57.000.

Hamm, Philip C.: *See*—
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Hammer, Jacob Meyer: *See*—
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Hansel, Otto, GmbH, Firma: *See*—
Dille, Alfred; and Thamm, Udo, 3,735,556.

Harden, Phillip L., to Bowmar Instrument Corporation. One or two or five code rotary magnetic position indicator. 3,736,588, Cl. 340-378.00r.

Harmsen, Johan L. Conductor rail support element. 3,735,845, Cl. 191-32.000.

Harnna, Takashi, to Nissan Motor Company, Limited. Vehicular safety device. 3,736,004, Cl. 280-150.0ab.

Harris, Elmer E.: *See*—
Smith, Richard A.; and Harris, Elmer E., 3,736,583.

Harris, Thomas J., to International Business Machines Corporation. Layer activated holographic data selection and display apparatus. 3,736,459, Cl. 315-11.000.

Harrison, John H.; Bowen, Robert J.; Urbach, Herman B.; and Icenhower, David E., to United States of America, Navy. Pressure equilibrated gas fuel cells and method. 3,736,187, Cl. 136-86.00b.

Hart, Atlee S. Apparatus for detecting and signaling light attenuation. 3,736,560, Cl. 340-53.000.

Hartford, Lloyd, to Marquardt Corporation, The. Shell machining apparatus. 3,735,651, Cl. 82-15.000.

Hartwig, Walter J., to Allis-Chalmers Corporation. Chain for grate conveyor or the like. 3,735,858, Cl. 198-195.000.

Haru, Teiji; Yoshida, Kyusaku; Machida, Katsutoshi; Wada, Natsuko; and Ishihara, Masao, to Konishiroku Photo Industry Co., Ltd. Antistatic composition. 3,736,268, Cl. 252-500.000.

Harvey, Donald M.; and Babcock, David L., to Eastman Kodak Company. Exposure control mechanism for photographic cameras. 3,735,676, Cl. 95-10.0ct.

Harvey, Donald M., to Eastman Kodak Company. Zone range finder apparatus. 3,736,057, Cl. 356-4.000.

Hashimoto, Koji; Mogi, Noboru; and Shindo, Makoto, to Showa Denko Kabushiki Kaisha. Method for the preparation of polyepoxides by polymerizing 1,2-epoxides by the use of a novel catalyst. 3,736,308, Cl. 260-88.30a.

Hatano, Itaru; and Tsukamoto, Hiroji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of making an expandable thermoplastic resin. 3,736,273, Cl. 260-2.50b.

Hattori, Soichiro. Spinning apparatus for continuous operation. 3,735,575, Cl. 57-51.300.

Hatz, Ernst. Piston engine. 3,735,741, Cl. 123-56.00c.

Hatz, Ernst, to Motorenfabrik Hartz KG. Decompression device for internal combustion engines. 3,735,745, Cl. 123-182.000.

Hauni-Werke Korber & Co., KG: *See*—
Kruse, Friedel; Wahle, Gunter; Erdmann, Otto; and Rudszinal, Willy, 3,735,767.

Hauser, Seymour, to Kreisler Manufacturing Corporation. Slip-through buckle. 3,735,455, Cl. 24-191.000.

Hausmann, Ernst, to Escher Wyss Limited. Centrifuge and discharge means therefor. 3,735,920, Cl. 233-46.000.

Havlova, Milada, nee Stribrny, to Messrs Vest Ges. m.b.H. Shade for a light. 3,736,418, Cl. 240-108.00r.

Hay, Donald John, to Nnited Kingdom Atomic Energy Authority. Synthetic 3-D hologram with reduced dispersion upon reconstruction. 3,736,039, Cl. 350-3.500.

Hayes, John C., to Universal Oil Products Company. Hydrotreating hydrocarbons with a Pt-Ge-Re-catalyst. 3,736,251, Cl. 208-143.000.

Hayes, John C., to Universal Oil Products Company. Hydrotreating of hydrocarbons. 3,736,252, Cl. 208-255.000.

Haythornthwaite, James, to Scapa Dryers, Inc. Seam for paper felts. 3,735,451, Cl. 24-33.000.

Hayward, Frank: *See*—
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Hazen, Edward J., to Bendix Corporation, The. True airspeed measuring apparatus. 3,735,635, Cl. 73-181.000.

Hebel, August G., II: *See*—
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Hebel, August G., Jr.; and Hebel, August G., II. Displacement transducer. 3,736,448, Cl. 310-15.000.

Heckner, William C. R., to Lee, Raymond, Organization, Inc., The. Gardening tool. 3,735,574, Cl. 56-400.160.

Heer, William F.: *See*—
Moore, Claude A.; and Heer, William F., 3,735,550.

Heflich, Henry G.; and Krumm, Charles G., to Kahle Engineering Co. Method and means for forming a thermometer bulb. 3,736,118, Cl. 65-110.000.

Hegenscheidt, Wilhelm, Kommanditgesellschaft: *See*—
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Heid, Walter, to Rexroth GmbH. Valve. 3,735,780, Cl. 137-625.690.

Heidrich, Paul F.; Kuhn, Lawrence; and Pennington, Keith S., to International Business Machines Corporation. Fast optical guided wave modulator and digital deflector. 3,736,045, Cl. 350-161.000.

Heil-Quaker: *See*—
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Heilhecker, Joe K.; Maurer, William C.; and Lock, Everett H., to Esso Production Research Company. Swivel. 3,736,007, Cl. 285-31.000.

Heinlen, Frederick Jay; and Manning, Randy Marshall, to AMP Incorporated. Lead frames and method of making same. 3,736,367, Cl. 174-52.00s.

Heinrichs, Frank W.: *See*—
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Helber, Herman; and Littauer, Ernest L., to Lockheed Aircraft Corporation. Chlorinator cell with internal pressure regulation. 3,736,322, Cl. 204-266.000.

Held, Robert Paul, to Du Pont de Nemours, E. I., and Company. Process for transferring images from a surface to a temporary surface and to a final surface. 3,736,138, Cl. 96-28.000.

Heller, Harry, to United States of America, Navy. Method of preparing a composite explosive with water-wet energetic compound. 3,736,194, Cl. 149-19.000.

Henc, Edward V. Applicator for paper handling apparatus. 3,735,733, Cl. 118-261.000.

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Henke, Erich G.; Braun, Helmut F.; Scholl, Karl L.; and Schubert, Rudolf. Elevating device in particular for paint spraying plants. 3,735,669, Cl. 91-1.000.

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Hermle, Werner, to Hilti Aktiengesellschaft. Metal washer for an anchoring member. 3,735,664, Cl. 85-10.00e.

Herubel, Jean-Frederic, to Schlumberger, N., & Cie. Device for fastening the ends of tubes which support elements for processing textile fibres. 3,735,450, Cl. 24-31.00r.

Heseltine, Donald W.: *See*—
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Hilti Aktiengesellschaft: *See*—
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Hilton, John Leslie, to Plessey Handel und Investments A.G. Fluid-pressure actuated press-tool equipment. 3,735,632, Cl. 72-453.000.

Hiraiwa, Kazuyoshi, to Nissan Motor Company Limited. Synchronizing mechanism of power transmission. 3,735,846, Cl. 192-53.00a.

Hirata, Akira; Kobayashi, Akio; Sakamoto, Eiichi; and Saito, Shizuo. Light-sensitive photographic material having exceptionally high resolving power. 3,736,145, Cl. 96-140.000.

Hirsch, Joseph, to United States of America, Navy. Swimmers tactile command navigation apparatus. 3,736,551, Cl. 340-5.00r.

Hirsch, Richard; and Tomezsko, Joseph F., to Paramount Precision Products, Inc. Fluid pressure motor with extensible and retractable part. 3,735,854, Cl. 198-24.000.

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Hoppe, Lothar, to Mecafil A.-G. Curve drive for oscillating motions on winding rods of stator winding machines. 3,735,642, Cl. 74-23.000.

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Hoshall, Charles H.; Seamone, Woodrow; and Konigsbert, Robert L., to United States of America, Navy. Myoelectrically controlled prosthesis. 3,735,425, Cl. 3-1.100.

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Howell, Alun Raymond, to United Kingdom of Great Britain and Northern Ireland, Minister of Aviation Supply in Her Britannic Majesty's Government of the. Ducted fans as used in gas turbine engines of the type known as fan-jets. 3,735,593, Cl. 60-226.000.

Hrivnyak, John. Spare tire and wheel carrier for pick-up trucks. 3,735,883, Cl. 214-454.000.

Hubbard, Howard A., Sr. Hopple measuring apparatus. 3,735,493, Cl. 33-125.00r.

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Hunt, John H. Air injection system for internal combustion engines. 3,735,740, Cl. 123-26.000.

Hunter, Edwin J.; and Walto, Joseph, to Toro Manufacturing Corporation. Water valve apparatus. 3,735,772, Cl. 137-15.000.

Hunter, Edwin J., to Toro Manufacturing Corporation. Automatic controller drive mechanism. 3,735,779, Cl. 137-624.200.

Hunter, Phillip S., to Burke Concrete Accessories, Inc. Retention clip for concrete slab key joint forming strips. 3,736,013, Cl. 287-189.350.

Hupp, Gerhard; and Vorgrimler, Ludwig, to Messrs. Mauser-Werke Aktiengesellschaft. Cartridge feeder device for automatic firearms with a drive mechanism independent of the breechblock. 3,735,667, Cl. 89-33.0ca.

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Hurschman, Alfred A.; and Schiller, Thomas P., to Ampoules Inc. Hypodermic devices. 3,735,761, Cl. 128-218.00m.
Hussong, George Richard. Method for the manufacture of coke. 3,736,248, Cl. 208-46.000.
Hutchison, Patrick F., to Standun, Inc. Metallic can body strippers and the like. 3,735,628, Cl. 72-344.000.
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Iacobucci, Guillermo Arturo; Myers, Dirck Van Buren; and Okubo, Kazuyoshi, 1/2 to Coca-Cola Company, The and 1/2 to Kikkoman Shoyu Co., Ltd. Process for preparing protein products. 3,736,147, Cl. 99-17.000.
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Johnson, Glover Douglas; Nicodemus, Keith Lynn; Schumacher, George Charles; and Slana, Matthew Francis, to Bell Telephone Laboratories, Incorporated. Time division switching system. 3,736,381, Cl. 179-15.0aq.
Johnson, James D.; and Edwards, Laurren C., Sr. Scavenger system for industrial engines. 3,735,594, Cl. 60-319.000.
Johnson, John R.; and Mercer, Benjamin, Jr., to Owens-Illinois, Inc. Container rotating apparatus. 3,735,855, Cl. 198-33.0ab.
Johnson, Lance H.: *See*—
Anderson, David W.; Gustafson, Richard N.; Johnson, Lance H.; Sparacio, Francis J.; Tomas, William M.; and Webster, James J., 3,736,566.
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Darling, Alan Sydney; and Selman, Gordon Leslie, 3,736,109.
Jones, Glenn A.: *See*—
May, Larry A.; and Jones, Glenn A., 3,735,897.
Jones, Gordon H.; and Moffatt, John C., to Syntex Corporation. Unsaturated nucleoside phosphonates, phosphonic acids and phosphonic acid salts. 3,736,314, Cl. 260-211.50r.
Jones, Jack D. Illumination platter on a mobil vehicle. 3,736,546, Cl. 338-15.000.
Jones, John B., Jr.; and Reeves, Adam A., to Paraho Corporation. Retorting of solid carbonaceous material. 3,736,247, Cl. 208-11.000.
Jones, Michael B.; and Rublack, Wilfred D., to General Electric Company. Annular exposure source. 3,735,677, Cl. 95-1.00r.
Jones, Peter Hadley; and Perun, Thomas John, to Abbott Laboratories. Erythromycin derivatives. 3,736,313, Cl. 260-210.00e.
Juhnke, Lawrence H., to Display Engineers Inc. Tube connecting means. 3,736,009, Cl. 287-54.00c.
Jung, David H.: *See*—
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Jung, Johann: *See*—
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Jurasek, Walter R., to Avoset Food Corporation. Blanking machine vacuum system. 3,735,654, Cl. 83-100.000.
Jurcak, Frank C. Lobster tail cutting device. 3,735,445, Cl. 17-71.000.
Juten, Milford A.: *See*—
Zettlemoyer, James E.; and McGee, Charles I., 3,735,906.
Kabushiki Kaisha Suwa Seikosha: *See*—
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Kaczerginski, Alexandre, to Societe Europeenne d'Isolateurs en Vorre Sedive. Apparatus for producing solid electrical insulators. 3,736,210, Cl. 156-431.000.
Kadron, Don G.; Hoff, Wallace J.; and Parks, Robert L., to Westinghouse Electric Corporation. Non-linear function generator. 3,736,515, Cl. 328-143.000.
Kagan, Claude Ancelme Roichel, to Western Electric Company. Inductive data coupler. 3,736,379, Cl. 179-2.00c.
Kahle Engineering Co.: *See*—
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Kahn, Ben, Furs Corporation: *See*—
Graf, Ernest, 3,735,421.
Kaiho, Toshio, to Takaia Kogyo Kabushiki Kaisha. Sealing device. 3,736,017, Cl. 292-317.000.
Kallianides, Milton; and Klein, Gerhart P. Continuous forming of anodes for capacitors. 3,736,237, Cl. 204-28.000.
Kamen, Ira: *See*—
Vogel, Joseph H.; Baltin, Will; and Kamen, Ira, 3,736,368.
Vogelman, Joseph H.; and Kamen, Ira, 3,736,369.
Kaminskas, Rimvydas, granted to United States Atomic Energy Commission under the provisions of 42 U.S.C. 2182. Position indicating system and method therefor. 3,736,430, Cl. 250-83.30r.
Kammann, Werner: *See*—
Koelschbach, Albert, 3,735,699.
Kamp, Leonard F.; and Ewald, William P., to Eastman Kodak Company. Strip metering mechanisms for advancing film in a film pack. 3,735,682, Cl. 95-31.0fm.
Kanazaki, Tadaaki: *See*—
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Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
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Kantz, Don B., to Ford Motor Company. Lubricating oil flow control for a rotary compressor. 3,736,079, Cl. 418-77.000.
Kaplan, Sam H., to Zenith Radio Corporation. Aperture mask for, and method of screening, a color cathode-ray tube. 3,736,137, Cl. 96-36.100.
Kappler, Donald L. Device for removing a fan from a shaft. 3,735,471, Cl. 29-261.000.
Karll, Roebrt E.: *See*—
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Karlsson, Karl Gosta, to Allmanna Svenska Elektriska Aktiebolaget. Device for continuous casting of metal. 3,735,799, Cl. 164-147.000.
Karter, Jesse; and Cullen, Patrick. Dental amalgam carrier. 3,735,492, Cl. 32-60.000.
Karustis, George A., Jr., to GAF Corporation. Method of preparing hexahydro-1,3,5-triacyl-s-triazines. 3,736,320, Cl. 260-248.0ns.
Kasai, Syozo: *See*—
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Kasberger, Ludwig, to Maschinenfabrik Fahr AG. Tractor-carried mower and hinge arrangement therefore. 3,735,572, Cl. 56-16.200.
Kaspaul, Alfred F.; and Kaspaul, Erika E., to Hughes Aircraft Company. Nucleation-recording medium comprising a photoconductor, a nucleation-enhancing metal salt, and a phthalocyanine dye former. 3,736,142, Cl. 96-90.00r.
Kaspaul, Erika E.: *See*—
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Katagiri, Shinjiro; and Kasai, Syozo, to Hitachi, Ltd. Electron lens of magnetic field type for an electron microscope and the like. 3,736,423, Cl. 250-49.50d.
Kataoka, Toshiya; and Takada, Atunobu, to Nisshin Oil Mills, Ltd., The. Method of inhibiting the acid corrosion of metals. 3,736,098, Cl. 21-2.70r.
Kato, Fumio: *See*—
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Kato, Paul S., Jr., to Hughes Aircraft Company. Automatic control system for video tracker. 3,736,376, Cl. 178-6.800.
Katte, Hans Jorgen: *See*—
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Katz, Morris H., to Pillsbury Company, The. Meat food analogs resistant to microbial spoilage. 3,736,148, Cl. 99-17.000.
Katz, Seymour. Lavage and cytology instrument. 3,735,751, Cl. 128-2.00f.
Katz, Yoram: *See*—
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Kaye, Gordon E., to Mallory, P. R., & Co., Inc. Battery of reserve cells. 3,736,188, Cl. 136-90.000.
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Kearns, Warren: *See*—
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Keinath, Hans; Kroger, Klaus; and Lauerbach-Lehmeier, Robert, to Zimmer Aktiengesellschaft. Apparatus for disagglomerating material. 3,735,959, Cl. 259-7.000.
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Keller-Volper, Ernest. Cylinder lock. 3,735,614, Cl. 70-377.000.
Kellogg Company: *See*—
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Keneally, John: *See*—
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Kentucky Fried Chicken Corporation: *See*—
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Kermode, David Winston. Sound origin direction finder. 3,736,553, Cl. 340-6.00s.

Kerr, David; and Curtis, Willard S., to Precision Valve Corporation. Combination tilt action valve. 3,735,955, Cl. 251-303.000.
Kertzman, Jack: *See*—
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Kesti, Richard R., to International Basic Economy Corporation. Valve unit. 3,735,781, Cl. 137-625.480.
Keuffel & Esser Company, mesne: *See*—
Frommeld, Hans-Dieter; Scheler, Siegfried; and Brauninger, Arno, 3,736,143.
Keur, Robert I.; and Dahl, Henry A., to Dick, A. B., Company. Ink drop writing system with nozzle drive frequency control. 3,736,593, Cl. 346-75.000.
Keystone Consolidated Industries, Inc.: *See*—
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Kilbane, John R.; and Wendt, Peter G., to Worthington-Cei Incorporated. Inlet, filter and noise suppressor enclosure for compressing apparatus. 3,736,074, Cl. 417-279.000.
Kinberger, James E. Camper. 3,736,019, Cl. 296-23.0mc.
Kinkel, Christian Frederick, to American Can Company. Full open end having chordal start tear score sections. 3,735,892, Cl. 220-54.000.
Kinkel, Christian Frederick, to American Can Company. Self-opening end closure having a repair coated rupturable interior score. 3,735,894, Cl. 220-54.000.
Kinkel, Klaus; Pfannmueller, Helmut; Schmidt-Thomee, Georg; Metzner, Franz Georg; and Gierth, Volker, to Badische Anilin- und Soda-Fabrik Aktiengesellschaft. Production of copolymers of ethylene. 3,736,305, Cl. 260-80.780.
Kinney, John E.; and Bone, Arnold R., to Dennison Manufacturing Company. Machine for inserting fasteners. 3,735,908, Cl. 227-67.000.
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Kleiner, Eduard K., to Ciba-Geigy Corporation. Perfluoroalkylsulfonamido-alkyl esters of fumaric acid and other ethylenically unsaturated polybasic acids and polymers thereof. 3,736,300, Cl. 260-78.40e.
Kleit, Robert H. System for loading trucks and warehouses. 3,735,884, Cl. 214-515.000.
Kljuev, Mikhail Markovich: *See*—
Lakomsky, Viktor Iosifovich; Zabarilo, Oleg Semenovich; Torkhov, Gennady Fedorovich; Pryanishnikov, Igor Stepanovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; and Zhuchin, Vladimir Nikoforovich, 3,736,361.
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Koenig, Gerhard. Three wire grounded receptacle with safety lock. 3,736,547, Cl. 339-14.00r.
Koenig, Karl-Heinz: *See*—
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Krauss-Maffei Aktiengesellschaft: *See—*
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Kruse, Friedel; Wahle, Gunter; Erdmann, Otto; and Rudszinal, Willy, to Hauni-Werke Korber & Co., KG. Method and machine for the making of cigarette packs or the like. 3,735,767, Cl. 131-25.000.

Krylov, Constantin A. Device for disengaging and recovering fishing gear. 3,735,521, Cl. 43-17.200.

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Kuster, Karl H., to GTE Automatic Electric Laboratories, Incorporated. DC-to-DC regulated converter current foldback power supply. 3,736,491, Cl. 321-14.000.

Kydd, Paul H., to General Electric Company. Bucket tip/collection slot combination for open-circuit liquid-cooled gas turbines. 3,736,071, Cl. 416-97.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Nakayama, Kiyoshi; Furuya, Akira; and Kato, Fumio, 3,736,228.

La Branche, Harvey W.: *See—*
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La Mesa Industries, Inc., mesne: *See—*
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Labofina S.A.: *See—*
Bracke, William J. I., 3,736,297.

Lachocki, Eugene, to RCA Corporation. Energy pump voltage regulator. 3,736,496, Cl. 323-22.00t.

Lademann, Ernest E.; and O'Connor, James J., to Bendix Corporation, The. Photoetched induction coil assembly. 3,736,543, Cl. 336-200.000.

Laerdal, Asmund S. Apparatus for practising resuscitation by insufflation and external heart massage. 3,736,362, Cl. 35-17.000.

Lagert, Harry, to Thorlag Mek Verksted. Indication clip for filing cards or the like. 3,735,515, Cl. 40-23.00a.

Lake, John K. Wall mountable aquarium. 3,735,738, Cl. 119-5.000.

Lakomsky, Viktor Iosifovich; Zabarilo, Oleg Semenovich; Torkhov, Gennady Fedorovich; Pryanishnikov, Igor Stepanovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; and Zhuchin, Vladimir Nikoforovich. Method for the plasma remelting of a consumale metal bar in a controlled atmosphere. 3,736,361, Cl. 13-34.000.

Laliwala, Jitendra R., to Carborundum Company, The. Control system for a filtering apparatus. 3,735,566, Cl. 55-273.000.

Lambert, Paul: *See—*
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Lamberti, Vincent; and Reardon, Robert, to Lever Brothers Company. Sodium exo-cis-1,4-endoxo-1-substituted cyclohex-5-ene-2,3-dicarboxylate compounds. 3,736,339, Cl. 260-347.300.

Lamm, William R.: *See—*
Dworschack, Robert G.; Chen, James C.; Lamm, William R.; and Davis, Larry G., 3,736,232.

Lammarino, Nicholas J., to Kelco Company. Process for the production of particle board using cross-linked Xanthomonos colloid in the glue mixture. 3,736,275, Cl. 260-17.300.

Landerer, Meinrad; and Kuisle, Anton. Removable anti-skid arrangement for vehicle tires. 3,735,789, Cl. 152-217.000.

Landry, Raymond William: *See—*
Badavas, Charles Arthur; Landry, Raymond William; and Piltzecker, John William, 3,735,905.

Langheinrich, Hans, to Vdo Tachometer Werke, Adolf Schindling GmbH. Apparatus for indication of measuring values. 3,736,585, Cl. 340-324.00r.

Langlois, Leo L.; Tadaki, Ralph T.; Ellis, John R., Jr.; Stevens, Roy W., Jr.; and Leech, Robert H., to Hughes Aircraft Company. Missile launch control system. 3,735,668, Cl. 89-1.814.

Larkin, Artemas M., to Lockheed Aircraft Corporation. Pitch link assembly and locking device therewith. 3,736,010, Cl. 287-62.000.

Larsen, George H.: *See—*
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Lawson, John E., Jr., to Atlantic Richfield Company. Hydrocarbonaceous feed treatment. 3,736,249, Cl. 208-80.000.

Lawton, William R., to Arkwright-Interlaken, Inc. Heat reactive transparent copy sheet. 3,736,166, Cl. 117-36.800.

Layer, Gerard E.; Kreuzer, John A.; and Yates, John S., to Susquehanna Corporation, The. Rocket propelled target. 3,735,985, Cl. 273-105.400.

Le Baron, Theodore, to American Telephone and Telegraph Company. Multicustomer centralized call diverter. 3,736,383, Cl. 179-18.0ha.

Leach Corporation: *See—*
Norris, Kermit A., 3,736,582.

Leach, James A., to Westinghouse Electric Corporation. Automatic resetting timer. 3,736,407, Cl. 219-492.000.

Lean, Eric G.; and Powell, Carl G., to International Business Machines Corporation. Dispersive acoustical deflector for electromagnetic waves. 3,736,044, Cl. 350-161.000.

Lear Siegler, Inc.: *See—*

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Leatherby, Vincent C., to Fuel Equipment Co., Inc. Gas-fired blast type burner. 3,736,095, Cl. 431-349.000.
Lebowitz, Samuel, to Tieco Products, Inc., mesne. Space divider system. 3,735,794, Cl. 160-135.000.
Lecoeur, Jacques, to Eclair International. Reflex motion picture camera mechanism. 3,736,052, Cl. 352-166.000.
Lee, David A.: *See—*
Platus, David L.; Lee, David A.; and Klein, Gernot Harold, 3,735,952.
Lee, David G. Lock decoder and decoding method. 3,735,496, Cl. 33-174.00f.
Lee, Francis F. Signal processing apparatus. 3,736,514, Cl. 328-55.000.
Lee, Joo C. Battery-run D-C motor with speed control, charging and steering systems. 3,736,480, Cl. 318-51.000.
Lee, Raymond, Organization, Inc., The: *See—*
Droz, Julius, 3,735,423.
Heckner, William C. R., 3,735,574.
Merrill, Richard L., 3,735,523.
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Leguijt, Jacob, to Mannesmann (Nederland) N.V. Impervious membrane oil storage system. 3,735,721, Cl. 114-.50t.
Leistner, Walter Hermann. Method of forming a nailing strip by applying a hot melt liquid plastic. 3,736,198, Cl. 156-65.000.
Lekan, Henry N.: *See—*
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Lenders, Wilhelmus Leonard Louis; Post, Hendrik Alle; Sie, Tjwan Khing; Visscher, Johannes Mattheus; and Quirijnen, Marius, to U.S. Philips Corporation. Print hammer for a printing machine. 3,735,698, Cl. 101-93.00c.
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Levenberg, Kay W. Exercise device adaptable to permit the performance of a plurality of different exercises. 3,735,979, Cl. 272-58.000.
Lever Brothers Company: *See—*
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Lewis, Roger N.; and Friedman, Ronald L., to Argus Chemical Corporation. Low molecular weight acyl peroxycarbonic esters. 3,736,344, Cl. 260-463.000.
Lewis, Scott C.: *See—*
Blount, Frederick T.; Geller, Henry A.; Moore, Richard D.; Leung, Howard; Lewis, Scott C.; and Redmond, Joseph M., 3,736,573.
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Libbey-Owens-Ford Company: *See—*
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Light, Rupert E., Jr., to Pennwalt Corporation. Polymerization of vinyl chloride with blends of peroxide initiators. 3,736,306, Cl. 260-87.100.
Lilly Industries, Limited: *See—*
Verge, John Pomfret; and Hughes, Peter Graham, 3,736,329.
Lim, Jin Twan, to Bell Canada-Northern Electric Research Limited. Active delay-equalizer network. 3,736,517, Cl. 328-167.000.
Lingg, Gerhard; Gottstein, Norbert; and Rostock, Joachim, to Mannesmann Aktiengesellschaft. System for distributing pieces of load such as baggage, parcels etc. 3,735,853, Cl. 198-20.000.
Linschitz, Henry: *See—*
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Linzmeier, Leonard J.; and Kowing, Loren D. Apparatus for fabricating wall panels and the like for buildings. 3,735,464, Cl. 29-200.00a.
Lippert, Hans J.: *See—*
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Lipscomb, Walter Peter; and Turner, Garland Linwood, to Allied Chemical Corporation. Two-planar deflector for dispersing and depositing nonwoven filamentary structures. 3,736,211, Cl. 156-441.000.
Lipsey, Elmer M.; and Swagerty, Arnold, to A-T-O Inc. Loran-C receiver. 3,736,590, Cl. 343-103.000.
Lipton, Thomas J., Inc.: *See—*
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Litton Systems, Inc.: *See—*
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Jarvis, George A., 3,736,398.
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Liuzzo, Giuseppe: *See—*
Barba, Diego; Liuzzo, Giuseppe; Tagliafferri, Giovanni; and Germana, Antonino, 3,735,808.
Livingston, Clifton W. Control blasting. 3,735,704, Cl. 102-23.000.
Lo, John C.; and Orinik, Michael T., to International Business Machines Corporation. Process for improved adhesion of electroless copper to a polyimide surface. 3,736,170, Cl. 117-47.00a.
Lock, Everett H.: *See—*
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Lockard, Joseph Larue, to AMP Incorporated. Rotary switch assembly with printed circuit rotor and multilayer housing features. 3,736,390, Cl. 200-11.0da.
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Loffler, Tilo; and Schindler, Herbert, to Schon & Cie Gesellschaft mit beschrankter Haftung. Machine for turning the shank edge on and securing it to the insole of a shoe. 3,735,438, Cl. 12-8.300.
Lohberg, Peter; Katte, Hans Jorgen; and Blieske, Herbert, to Braun Aktiengesellschaft. Circuit arrangement for producing a high voltage pulse. 3,736,464, Cl. 315-209.00t.
Lombardo, Joseph. Variable speed toy transmission. 3,735,527, Cl. 46-206.000.
Lome Industries, Incorporated: *See—*
Coughran, Samuel J., Jr., 3,735,788.
Long, William W., III, to Carborundum Company, The. Workpiece treating apparatus. 3,735,532, Cl. 51-9.000.
Longacre, Andrew, Jr., to United States of America, Navy. Precision voltage bias for Josephson oscillators. 3,736,527, Cl. 331-107.00s.
Longinotti, Enrico. Prefabricated building structure including metal framework and prefabricated molded panels of cementitious material. 3,735,544, Cl. 52-235.000.
Lopic, Franz: *See—*
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Lorenz, Henry; and Scholz, Hans-Joachim, to VEB Spinnereimaschinenbau. Cleaning device for circular combs on a combing machine. 3,735,446, Cl. 19-218.000.
Lorenzen, Robert K. Powered mechanical shaker device. 3,735,964, Cl. 259-75.000.
Los, Marinus, to American Cyanamid Company. Steroid-like compounds and method of synthesis. 3,736,345, Cl. 260-465.00d.
Lotan, Amram Zvi; and Jen, Israel Dixson Teh-Chao, to Bunker Ramo Corporation. Program sequence control. 3,736,567, Cl. 340-172.500.
Louys, Georges, to Fischer, Georg, Aktiengesellschaft. Arrangement for disengaging threading dies in a threading die head. 3,735,436, Cl. 10-96.00r.
L.S. Associates, Inc.: *See—*
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Lucas, Joseph, Industries Limited: *See—*
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Luchaco, David G., to Bendix Corporation, The. Circuit for controllably driving a Schmitt trigger in response to preselected variations in an analog input signal and in a digitalized input signal. 3,736,444, Cl. 307-290.000.
Lueben, Robert Q., to Swift & Company. Vented poultry container. 3,735,913, Cl. 229-6.00r.
Lukas, Joseph. Hand mounted eraser. 3,735,442, Cl. 15-227.000.
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Lutz, Pierre. Inflatable emergency device. 3,735,723, Cl. 116-124.00b.
Lyons, William L. Portable footstool and lounge chair combination. 3,736,023, Cl. 297-118.000.
Ma, Edmund; and Mills, Don. Educational toy. 3,735,501, Cl. 35-9.00c.

Mac Donald, Hugh D.; Waecker, Norman J.; and Sterrett, Charles S., to United States of America, Army. Rocket catapult. 3,735,948, Cl. 244-122.000.
Mac Millan, Alan L.: *See—*
De Angelis, Peter; Morris, Alfred R.; and Mac Millan, Alan L., 3,736,253.
MacFarland, Charles H., to Scott & Fetzer Company, The. Hand held vibrator with flexible drive shaft. 3,735,757, Cl. 128-36.000.
Mach, Lumir: *See—*
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Mack, William T.; and Quinn, Thomas. Storm choke. 3,735,813, Cl. 166-183.000.
MacKay, John Dennis. Protective cover for plaster cast. 3,735,759, Cl. 128-82.000.
Mackhem, Walter C.: *See—*
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MacLaren, Owen Finlay. Folding wheel chair. 3,736,021, Cl. 297-42.000.
MacLean, Roderick Campbell, to Bell Telephone Laboratories, Incorporated. Adjustable equalizer control apparatus. 3,736,530, Cl. 333-18.000.
MacLean, Roderick Campbell, to Bell Telephone Laboratories, Incorporated. Adjustable equalizer control apparatus. 3,736,531, Cl. 333-18.000.
Magendans, Frederik; and van Rheenen, Bernard Josef Pieter, to U.S. Philips Corporation. Method of manufacturing rotary anodes for use in X-ray tube and rotary anodes manufactured by said method. 3,735,458, Cl. 29-25.180.
Maggio, Joseph P.; and Richter, Herbert, to Elastic Systems Corporation. Multi-ply belt for waistband construction. 3,735,424, Cl. 2-221.000.
Maggio, Joseph P., to Elastic Systems Corporation. Festooning machine. 3,735,554, Cl. 53-116.000.
Major, James M.; Truscello, Peter J.; and Provasnik, Robert, to Computer Test Corporation. System and method for magnetically testing plated wire. 3,736,499, Cl. 324-34.00r.
Makimoto, Tsugio, to Hitachi, Ltd. Method of manufacturing an integrated circuit having a transistor isolated by the collector region. 3,735,481, Cl. 29-578.000.
Malancon, Leo: *See—*
Mohr, Max C.; Malancon, Leo; and Monaghan, Stephen R., 3,736,535.
Mallerich, Dallas J., Jr., to Dyad Systems, Inc. Single line per bit asynchronous circuit and system. 3,736,575, Cl. 340-173.00r.
Mallin, Sidney. Exerciser adaptor stand for detachably receiving the rear portion of a bicycle. 3,735,981, Cl. 272-73.000.
Mallory, P. R., & Co., Inc.: *See—*
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Marchignoni, Albano. Automatic pizza making machine. 3,735,692, Cl. 99-353.000.
Markovits, Arthur L.; and Wolfson, Stanley W., to Clinical Sciences, Inc. Microscope slide assembly. 3,736,042, Cl. 350-95.000.
Marquardt Corporation, The: *See—*
Hartford, Lloyd, 3,735,651.
Marriott, Lee Walter, to Dow Chemical Company, The. Method of manufacturing vented lined pipe. 3,735,475, Cl. 29-455.000.
Marsh, Anthony, to Plessey Handel und Investments A.G. Circular magnetic domain devices. 3,736,579, Cl. 340-174.0tf.
Marsh, Orville H.: *See—*
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Marsh, Paul G., to Black Clawson Company, The. Waste treatment and fiber reclamation system. 3,736,223, Cl. 162-4.000.
Marshall, Clifford D., to Shell Oil Company. Stabilization of unsaturated polyesters and resulting products. 3,736,289, Cl. 260-837.00r.
Martel, Jacques; and Toromanoff, Edmond, to Roussel-UCLAF. Cyclopentanone-2-carboxylates. 3,736,319, Cl. 260-240.00r.
Martin, John C., to Bunn-O-Matic Corporation. Cold water pour-in beverage maker with blanket heater and bimetallic thermostat. 3,736,155, Cl. 99-282.000.
Martin, Robert M.: *See—*
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Marvel, Carl S., to Du Pont de Nemours, E. I., and Company. Thermally stable polymers having contiguous pyrazine, imidazole and Δ^3-pyrroline rings. 3,736,299, Cl. 260-78.00r.
Marx, Paul: *See—*
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Masuda, Noboru, to Denki Onkyo Co., Ltd. Galvano-magnetro effect apparatus. 3,736,578, Cl. 340-174.00a.
Masuda, Noburu; and Kuroyanagi, Masai, to Denki Onkyo Co., Ltd. Galvano-magnetro effect apparatus. 3,736,441, Cl. 307-149.000.
Mathus, Gregory, to Data Packaging Corporation. Storage system for tape cassettes. 3,736,036, Cl. 312-285.000.
Mator, Richard T.: *See—*
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Matsumoto, Mikio; Terada, Kenji; and Matsunaga, Mitsuru, to Taubakimoto Chain Company. Branching and joining apparatus in automatic carrying system. 3,735,709, Cl. 104-130.000.
Matsumoto, Teruo, to Epoch Company, Ltd. Educational device. 3,735,500, Cl. 35-9.00a.
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Matty, Thomas C.; and Perry, Robert H., to Westinghouse Electric Corporation. Apparatus for sequentially energizing electrical utilization devices. 3,736,438, Cl. 307-130.000.
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May, Larry A.; and Jones, Glenn A., to Keene Corporation. Self service dispensing remote control system. 3,735,897, Cl. 222-16.000.
Mayo, Marvin J., to Altair Scientifics, Inc. Apparatus for controlled lapping of optical surfaces to correct deviations from desired contours. 3,735,534, Cl. 51-57.000.
Mayo, Marvin J., to Altair Scientifics, Inc. Optical contour scanner. 3,736,060, Cl. 356-124.000.
Mc Aulffe, Gerald K., to International Business Machines Corporation. Transversal filter equalizer for partial response channels. 3,736,414, Cl. 235-181.000.
Mc Cormick, Michael R.: *See—*
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Mc Donnell Douglas Corporation: *See—*
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Mc Glynn, James J., to Lukens Steel Company. Method of using and removing a parting compound. 3,735,477, Cl. 29-470.900.
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McArthur, John Norrie. Microscope with selectively operable illuminating and viewing means. 3,736,041, Cl. 350-87.000.
McBirnie, Percival J. Cake cover. 3,736,214, Cl. 161-18.000.
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McCaully, Ronald J.; and Bell, Stanley C., to American Home Products Corporation. 6-(2-Substituted-3-phenyl-2H-isoindole-1-carboxamido) penicillanic acids. 3,736,318, Cl. 260-239.100.

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Miller, Jack. Method for pumping oil through terrain containing permafrost. 3,735,769, Cl. 137-13.000.

Miller, Nathan W., to Flag-Matic Inc. Water skier safety alarm. 3,735,724, Cl. 116-132.000.

Miller, Paul Marcus, to Tangen Drives, Inc. Centrifugal parts feeder and method. 3,735,859, Cl. 198-220.0bg.

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Mitchell, Robert Davis, to Combustion Engineering, Inc. Briquetting press with briquette conveying facility. 3,736,084, Cl. 425-78.000.

Mitchell, Robert Davis, to Combustion Engineering, Inc. Briquetting press with briquette removal mechanism. 3,736,085, Cl. 425-78.000.
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Munn, Sumner T., to Cunningham Corporation. Free running pulse position modulation system with receiver blanking. 3,736,509, Cl. 325-143.000.
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Tokuyama, Takashi; Tsuchimoto, Takashi; Ikeda, Takahide; Nishimatsu, Shigeru; and Sano, Hisumi, 3,736,192.
Nishkian, Martin A.; and Nuttall, Wayne E., to United States Steel Corporation. Flexible seal for a vapor cavity. 3,735,891, Cl. 220-26.00s.
Nissan Motor Company, Limited: *See—*
Aono, Shigeo; and Nambu, Shyuya, 3,735,742.
Harnna, Takashi, 3,736,004.
Hiraiwa, Kazuyoshi, 3,735,846.
Yabuta, Keiichiro; and Doi, Kaname, 3,736,031.
Nissen, Warren I.; and Petrillo, Richard J., to Gillette Company, The. Article holder. 3,735,860, Cl. 206-16.00a.
Nisshin Oil Mills, Ltd., The: *See—*
Kataoka, Toshiya; and Takada, Atunobu, 3,736,098.
Nitta, Yoshio; Kiyokuni, Nobuaki; and Kawasaki, Kikuo, to Fuji Denki Seizo Kabushiki Kaisha. Circuit breaker. 3,736,440, Cl. 307-140.000.
Nnited Kingdom Atomic Energy Authority: *See—*
Hay, Donald John, 3,736,039.
Nobs, Hugo, to Maschinenfabrik Burckhardt AG. Stuffing boxes. 3,735,991, Cl. 277-27.000.
Norbert, Jorss; and Eder, Erich, to Kronseder, Hermann. Label extractor in a labeling machine. 3,736,213, Cl. 156-570.000.
Nordmeyer, Robert A., to Pertec. Reel hub assembly. 3,735,935, Cl. 242-68.300.
Noritake, Mitsuo, to Minolta Camera Kabushiki Kaisha. Curtain shutter for photographic cameras. 3,735,688, Cl. 95-57.000.
Norland, Kenneth S.: *See—*
Buckler, Sheldon A.; Kennedy, David P.; and Norland, Kenneth S., 3,735,680.
Noroian, George, 50% to Etkin, Michael. Portable commode for pets employing removeable maintenance apparatus. 3,735,735, Cl. 119-1.000.
Norris, Kermit A., to Leach Corporation. Galloping base line compensating circuit. 3,736,582, Cl. 340-174.10h.
Norris, Peter Edward; and Micheletti, Frank Benjamin, to RCA Corporation. Method of making an MOS transistor including a gate insulator layer of aluminum oxide and the article so produced. 3,735,482, Cl. 29-571.000.
Nortec Electronics Corporation: *See—*
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North American Rockwell Corporation: *See—*
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Gould, Reginald J., 3,736,541.
Koide, Frank K.; and Hume, Frederick R., 3,736,504.
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Northrop Corporation: *See—*
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Northwest Tool & Die, Inc.: *See—*
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Bart, Ronald K.; and Kiovsky, Joseph R., 3,736,267.
Notelteirs, Victor Rosallie; and Janssen, Eduard Jozef Philomina, to U.S. Philips Corporation. Support for the filament body of a tubular lamp. 3,736,455, Cl. 313-274.000.
Novak, Ernest R., to Du Pont de Nemours, E. I., and Company. Polyethers containing repeating perchloroaromatic units. 3,736,293, Cl. 260-61.000.
Novotney, Marguerite E. Foot and ankle cast enclosure. 3,735,758, Cl. 128-82.000.
Nuttall, Wayne E.: *See—*
Nishkian, Martin A.; and Nuttall, Wayne E., 3,735,891.
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Obuch, Edward A.; and Waddington, William T., to Buchanan Electrical Products Corporation. Hand tool for tensioning and cutting wire tie straps. 3,735,784, Cl. 140-93.200.
Occidental Petroleum Corporation: *See—*
Sass, Allan; Finney, Clem; McCarthy, Harry; and Kaufman, Paul, 3,736,233.
O'Connell, John T.: *See—*
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O'Connor, James J.: *See—*
Lademann, Ernest E.; and O'Connor, James J., 3,736,543.
Oeland, Ernest N., Jr., to United States of America, Navy. Diver's belt and method of manufacture. 3,735,598, Cl. 61-70.000.
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Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuiti; Ogawa, Satoshi; and Mishima, Shizuo, 3,736,168.
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Ohno, Eiichi; Danno, Mitsuaki; Yamazaki, Eizo; Ohkawa, Kiyoto; and Watanabe, Osamu, 3,736,063.
Ohki, Haruo, 50% to Ito, Yoshie. Automatic rotation indexing and masking of drum change device with manual release of the masking shutters. 3,735,987, Cl. 273-143.00r.
Ohno, Eiichi; Danno, Mitsuaki; Yamazaki, Eizo; Ohkawa, Kiyoto; and Watanabe, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Comparison system for determining shape and intensity of illumination of luminous objects. 3,736,063, Cl. 356-160.000.
Ohtsuji, Nasaaki: *See—*

Okada, Masaaki; Takemori, Hayashi; Kita, Toshio; Nakai, Toshiaki; Ohtsuji, Nasaaki; Fujiwara, Yasuhiro; Tamura, Shoji; and Morita, Koji, 3,736,173.

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Okada, Masaaki; Takemori, Hayashi; Kita, Toshio; Nakai, Toshiaki; Ohtsuji, Nasaaki; Fujiwara, Yasuhiro; Tamura, Shoji; and Morita, Koji, to Dainichi-Nippon Cables, Ltd. Method of preparing curable polyolefin granules containing a cross-linking agent. 3,736173, Cl. 117-100.00c.

Okada, Takahiko, to Toyoda Koki Kabushiki Kaisha. Three point contact steady rest. 3,736,114, Cl. 51-238.00s.

Okawa, Mikio: *See*—
Nabae, Akira; and Okawa, Mikio, 3,736,437.

O'Keefe, Thomas A., to Northwest Tool & Die, Inc. Transfer mechanism. 3,735,852, Cl. 198-19.000.

Oksak, Vladimir Ivanovich: *See*—
Deribas, Andrei Andreevich; Kudinov, Vladimir Mikhailovich; Matveenkov, Felix Iovich; Oksak, Vladimir Ivanovich; Simonov, Valery Alexandrovich; and Ostapenko, Nikolai Gerasimovich, 3,735,476.

Okubo, Kazuyoshi: *See*—
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Olin Corporation: *See*—
Bowman, Cadet E.; and Hayward, Frank, 3,736,093.
Tranel, Lester J., 3,735,720.

Olin, John F., to Monsanto Company. Lower alkyl 3-(5-chlorisalicyidene) dithiocarbazates. 3,736,343, Cl. 260-455.00a.

Olivero, Carlo F. Combination toilet and urinal. 3,735,428, Cl. 4-97.000.

Olivetti, Ing., C., & C., S.p.A.: *See*—
Azzalin, Bruno; and Bertina, Domenico, 3,735,921.

Olson, Alfred C.: *See*—
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Oncescu, Tatiana: *See*—
Murgulescu, Ilie G.; Oncescu, Tatiana; and Vlagiu, Ioni, 3,736,241.

O'Neill, Feiten Michael. Method of making window envelopes. 3,735,675, Cl. 93-61.00a.

O'Neill, John Joseph: *See*—
Vossen, John Louis; and O'Neill, John Joseph, 3,736,406.

Ono, Hiroyuki, to Aisin Seiki Kabushiki Kaisha. Air-suspension system for motor vehicles. 3,736,003, Cl. 280-124.00f.

Ono, Hisatake: *See*—
Yamashita, Hiroshi; Sekikawa, Nobuyoshi; and Ono, Hisatake, 3,736,139.

Onoprienko, Vasily Petrovich: *See*—
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Orient Watch Co., Ltd.: *See*—
Takagi, Tooru, 3,735,585.

Orinik, Michael T.: *See*—
Lo, John C.; and Orinik, Michael T., 3,736,170.

Ortiz, James J. Arm wrestling machine. 3,735,983, Cl. 273-1.00e.

Osojnak, Boris M. Sealing ring with integral label holder. 3,735,863, Cl. 206-53.000.

Ostapenko, Alexei Nikolaevich: *See*—
Deribas, Andrei Andreevich; Kudinov, Vladimir Mikhailovich; Matveenkov, Felix Iovich; Oksak, Vladimir Ivanovich; Simonov, Valery Alexandrovich; and Ostapenko, Nikolai Gerasimovich, 3,735,476.

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Ostbo, Karl Robert Ambjorn. Plate heat exchanger. 3,735,810, Cl. 165-142.000.

O'Sullivan, Denis J.; and Bolgep, Bernard J., to Loctite (Ireland), Limited. Anaerobic composition in aerosol form. 3,736,260, Cl. 252-188.30r.

Otto Bock Orthopadische Industrie KG: *See*—
Horvath, Eduard, 3,735,426.

Otto, Walter J., to Sethco Manufacturing Corporation. Pump and filter unit. 3,736,075, Cl. 417-366.000.

Ovalstrapping, Inc.: *See*—
Pasic, James A., 3,735,555.

Overman, Joseph D.; and Strange, Jack F., to Du Pont de Nemours, E. I., and Company. Photosolubilization process using chemically sensitized photosoluble silver halide layers. 3,736,141, Cl. 96-64.000.

Owen, Edward A., to Westinghouse Electric Corporation. Electric control devices with mechanical interlock. 3,736,538, Cl. 335-160.000.

Owens-Corning Fiberglas Corporation: *See*—
Russell, Robert G., 3,736,116.

Owens-Illinois, Inc.: *See*—
Croom, Hardy C., 3,736,254.
Francel, Josef; and Mansur, Fred E., 3,736,176.
Johnson, John R.; and Mercer, Benjamin, Jr., 3,735,855.

Owston, Ernest H., Jr.; and Dinsmore, Robert L., to Atlantic Richfield Company. Mono- and dicresyl phosphate amine rust inhibitors. 3,736,110, Cl. 44-56.000.

Oxy Metal Finishing Corporation: *See*—
Hacias, Kenneth J., 3,736,157.

Oxy-Dry Sprayer Corporation: *See*—
Kossak, Joseph J., 3,735,702.

Ozutsumi, Minoru; Miyazawa, Yoshihide; Motohashi, Katsuiti; Ogawa, Satoshi; and Mishima, Shizuo, to Hodagaya Chemical Co., Ltd. and Fuji Photo Film Co., Ltd. Pressure-sensitive phthalide compound copying papers. 3,736,168, Cl. 117-36.200.

Pabalan, Javier A., Jr., to Sybron Corporation. Dental shielding device. 3,735,491, Cl. 32-33.000.

Pachaly, Robert W.: *See*—
Dowdell, Stewart Harold; and Pachaly, Robert W., 3,735,600.

Pachuta, John Michael: *See*—
Berenbaum, Morris Benjamin; Pachuta, John Michael; and Sorg, Earl Harry, 3,736,301.

Pacific Mariculture, Inc.: *See*—
Budge, William W., 3,735,737.

Padgett, Clarence W., to North American Rockwell Corporation. High gain field effect transistor amplifier using field effect transistor circuit as current source load. 3,736,522, Cl. 330-35.000.

Padovani, Henry R.: *See*—
Chafin, James M.; and Padovani, Henry R., 3,735,439.

Pagano, Henry A., to Lee, Raymond, Organization, Inc., The. Automatic jar shaker. 3,735,962, Cl. 259-72.000.

Pains-Wessex Limited: *See*—
Elstow, William Rupert Brooke; and Witt, Anthony Ronald, 3,735,706.

Paintin, John D. Hanger assembly for automobile exhaust systems. 3,735,950, Cl. 248-62.000.

Palmer, Donald J.; Palmer, Mark L.; and Breinin, Irwin A. Practice putting surface. 3,735,988, Cl. 273-178.00b.

Palmer, Mark L.: *See*—
Palmer, Donald J.; Palmer, Mark L.; and Breinin, Irwin A., 3,735,988.

Palz, Wolfgang, to Centre Nationale d'Etudes Spatiales. Space station with solar generators. 3,735,942, Cl. 244-1.0ss.

Panhard, Jean, to Societe de Constructions Mecaniques Panhard & Levassor. Ignition device for monorotor rotary piston internal combustion engines. 3,735,739, Cl. 123-8.090.

Panissidi, Hugo A., to International Business Machines Corporation. Pneumatic reader for perforated media. 3,735,771, Cl. 137-15.000.

Panker, Bent Jorgen. Carpet base element. 3,735,537, Cl. 52-660.000.

Paragon Gears Incorporated: *See*—
Benson, Carl I. Jr., 3,735,644.

Paraho Corporation: *See*—
Jones, John B., Jr.; and Reeves, Adam A., 3,736,247.

Paramonoff, Elpidifor, to Standun Inc. Apparatus for forming one piece metallic can bodies. 3,735,629, Cl. 72-349.000.

Paramount Precision Products, Inc.: *See*—
Hirsch, Richard; and Tomezsko, Joseph F., 3,735,854.

Parekh, Amritlal C.; and Jung, David H., to Research Corporation. Reagent for determining cholesterol. 3,736,263, Cl. 252-408.000.

Parekh, Amritlal C.; and Jung, David H., to Research Corporation. Method for the quantitative determination of cholesterol. 3,736,340, Cl. 260-397.250.

Parillo, Vincent, to Bond Stores, Incorporated. Security device for clothes racks. 3,735,875, Cl. 211-7.000.

Park, Wallace Sidney. Rotary shutter. 3,735,687, Cl. 95-61.000.

Parks, Robert L.: *See*—
Kadron, Don G.; Hoff, Wallace J.; and Parks, Robert L., 3,736,515.

Parnet, Bernard, to Saint-Gobain Industries. Process and apparatus for creating codified cartographic representations of variable quantities. 3,736,375, Cl. 178-6.800.

Parsons, Brian Neville: *See*—
Nichols, Douglas Alan; and Parsons, Brian Neville, 3,736,096.

Pasic, James A., to Ovalstrapping, Inc. Apparatus for strapping loads. 3,735,555, Cl. 53-124.00d.

Passons, William Erby; and Reese, William Rubin. Apparatus for tufting uniform cut pile. 3,735,715, Cl. 112-79.00r.

Patella, Ralph F., to Celanese Corporation. Aqueous vinyl acrylic interpolymer emulsion and use thereof in latex paints. 3,736,287, Cl. 260-29.6ta.

Patent-Treuhand-Gesellschaft fur Elektrische Gluhlamper mbH: *See*—
Weinger, Gerhard; and Pupp, Hanns-Peter, 3,736,451.

Patin, Pierre. Plate for conveyors employing sliding plates. 3,735,851, Cl. 198-16.00r.

Patnode, Homer: *See*—
Mousseau, Richard J., Jr.; and Patnode, Homer, 3,735,562.

Paton, Boris Evgenievich; Latash, Jury Vadimovich; Medovar, Boris Izrailevich; Emelianenko, July Georgievich; and Kljuev, Mikhail Markovich, to Institut Elektrosvarki Im. E. O. Patona. Method for electroslag remelting of metals with slag introduction. 3,73,124, Cl. 75-10.00c.

Patterson, Robert C.: *See*—
Micheller, Rudolph J.; and Patterson, Robert C., 3,735,569.

Paulus, Max: *See*—
Hamelin, Andre; Paulus, Max; and Guillaud, Charles, 3,736,106.

Pauly, Ronald R.: *See*—
Zbikowski, Theodore H.; Pauly, Ronald R.; and Pfeilsticker, Lee J., 3,735,528.

Pearce, Larry N., to Deering Milliken Research Corporation. Yarn bulking apparatus. 3,735,609, Cl. 68-5.00c.

Pearch, Max W., to Rex Products, Inc. Furnace. 3,735,968, Cl. 266-24.000.

Pearl, David R., to Gerber Garment Technology. Device for cutting sheet material. 3,735,660, Cl. 83-560.000.

Pearson Electronics, Inc.: *See—*
Everton, Deloss W.; and Meacham, David D., 3,736,386.

Pease, Roger Fabian Wedgwood, to Bell Telephone Laboratories, Incorporated. Conditional vertical subsampling in a video redundancy reduction system. 3,736,373, Cl. 178-6.000.

Pechiney Ugine Kuhlmann: *See—*
De Cadenet, Jean-Jacques; Gueussier, Andre; and Tricot, Roland, 3,736,128.

Pedersen, Egon A., to Singer Company, The. Keyboard switch assembly with pushbutton magnetic latching structure for non-operative position. 3,736,397, Cl. 200-169.0pb.

Peer, Vladimir: *See—*
Crowne, Francis Raymond; and Peer, Vladimir, 3,736,276.

Pelster, Arthur F.; Johns, Eugene C.; and Sullivan, Norman C., to Kentucky Fried Chicken Corporation. Hot oil recirculating cooking system. 3,735,693, Cl. 99-408.000.

Peltz, John R.: *See—*
Coleman, Kenneth W.; Peltz, John R.; and Stoldt, Clayton L., 3,736,503.

Penberthy, Harvey Larry. Ice axe. 3,735,434, Cl. 7-8.10r.

Penet, Pierre Marie Marcel. Flow-meter and viscometer. 3,735,637, Cl. 73-231.00r.

Peng, Stephen C.: *See—*
Camelon, Melville J.; Peng, Stephen C.; and Thomson, David M., 3,736,279.

Pennington, Keith S.: *See—*
Heidrich, Paul F.; Kuhn, Lawrence; and Pennington, Keith S., 3,736,045.

Pennucci, Frank P. Hydraulic power module. 3,735,671, Cl. 92-90.000.

Pennwalt Corporation: *See—*
Light, Rupert E., Jr., 3,736,306.

Perkins, Clive: *See—*
Molins, Desmond Walter; Labbe, Francis Auguste Maurice; and Perkins, Clive, 3,735,672.

Perks, Maurice Arthur: *See—*
Barker, Allan; and Perks, Maurice Arthur, 3,736,225.

Perl, Martin M.: *See—*
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Perma Pure Process, Inc.: *See—*
Skarstrom, Charles W.; and Kertzman, Jack, 3,735,558.

Perri, Peter R.: *See—*
Anderson, Albin R.; Grenier, Robert P.; and Perri, Peter R., 3,736,426.

Perry, Robert H.: *See—*
Matty, Thomas C.; and Perry, Robert H., 3,736,438.

Perry, Robert J., to Phillips Petroleum Company. Ethylene-propylene copolymer production with triphenylphosphite as catalyst adjuvant. 3,736,307, Cl. 260-88.20r.

Pertec: *See—*
Nordmeyer, Robert A., 3,735,935.

Peruglia, Marco; and Michellone, Giancarlo, to Fiat Societa per Azioni. Motor vehicle hydraulic braking systems. 3,736,030, Cl. 303-6.00c.

Perun, Thomas John: *See—*
Jones, Peter Hadley; and Perun, Thomas John, 3,736,313.

Peterson, Howard: *See—*
Smith, David R.; and Peterson, Howard, 3,736,303.

Petrie, William E. Pipe support. 3,735,973, Cl. 269-296.000.

Petrikovsky, Efim Lvovich. Marking device. 3,735,725, Cl. 118-7.000.

Petrillo, Richard J.: *See—*
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Petrolite Corporation: *See—*
Watson, Frederick D.; and Jarvis, Howell R., 3,736,245.

Pettibone Corporation: *See—*
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Petty Geophysical Engineering Company: *See—*
Barr, Frederick J., Jr., 3,736,556.

Pfannmueller, Helmut: *See—*
Kinkel, Klaus; Pfannmueller, Helmut; Schmidt-Thomee, Georg; Metzner, Franz Georg; and Gierth, Volker, 3,736,305.

Pfeilsticker, Lee J.: *See—*
Zbikowski, Theodore H.; Pauly, Ronald R.; and Pfeilsticker, Lee J., 3,735,528.

Pfizer Inc.: *See—*
De Zeeuw, John R.; and Tynan, Edward J., III, 3,736,229.

Pfund, Alvin F., to Dahlstrom Corporation. Mounting assembly for elevator door sill. 3,735,539, Cl. 52-98.000.

Philco-Ford Corporation: *See—*
Cushing, Charles J.; Schwind, Kurt C.; and Vander Neut, Richard D., 3,736,065.

Phillips, F. C., Incorporated: *See—*
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Phillips Petroleum Company: *See—*
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Rogers, Joseph S., Jr.; and Forseth, Glenn J., 3,736,102.

Piasek, Edmund J.; and Karll, Roebrt E., to Standard Oil Company (Indiana). High molecular weight Mannich condensation products from two different alky-substituted hydroxyaromatic compounds. 3,736,357, Cl. 260-570.50p.

Pickles, Joseph, to Ferro Manufacturing Corporation. Transmission and housing. 3,735,645, Cl. 74-606.000.

Pierce, Albert R., III.; and Rodriguez, David, to Lipton, Thomas J., Inc. Odor suppressing litter material. 3,735,734, Cl. 119-1.000.

Pilachowski, Martin Thomas; Stikeleather, Larry F.; and Zach, Donald J., to Universal Oil Products Company. Energy absorbing seat for snowmobiles. 3,736,020, Cl. 296-63.000.

Pillard, Claude, to Centre Technique du Cuir. Treatment barrel. 3,735,611, Cl. 69-30.000.

Pillsbury Company, The: *See—*
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Piltzecker, John William: *See—*
Badavas, Charles Arthur; Landry, Raymond William; and Piltzecker, John William, 3,735,905.

Pirelli General Cable Works Limited: *See—*
Donelan, James Arthur Francis, 3,735,616.

Pirtle, Othel L., Jr. Liquid-liquid extraction apparatus and method. 3,736,101, Cl. 23-267.000.

Pirtle, Othel L., Jr. Colloidal Composition useful as vehicle for diagnostic radioisotope. 3,736,262, Cl. 252-313.00r.

Pisarski, Lech, to Humetrics Corporation. Head harness for EEG electrodes. 3,735,753, Cl. 128-2.10e.

Plantard, Bernard. Continuous sheet slitting mills. 3,735,937, Cl. 242-75.200.

Plasser, Franz; and Eglseer, Franz, to Plasser, Franz, Bahnbaumaschienen and Industriegesellschaft m.b.H. Mobile track survey apparatus for determining grade variations. 3,735,495, Cl. 33-144.000.

Plasser, Franz; and Theurer, Josef. Drive for vibrating a track maintainance machine tool. 3,735,708, Cl. 104-12.000.

Plasser, Franz, Bahnbaumaschienen: *See—*
Plasser, Franz; and Eglseer, Franz, 3,735,495.

Plastetics, Inc.: *See—*
Bellasalma, Gerald J., 3,735,536.

Plastofold A.G.: *See—*
Broek, Johannes Bernardus, 3,735,795.

Platt, Everett A., Jr.: *See—*
Siel, Harry A., 3,735,787.

Platts, Dennis R.: *See—*
Kirchner, Henry P.; and Platts, Dennis R., 3,736,171.

Platus, David L.; Lee, David A.; and Klein, Gernot Harold, to Mechanics Research, Inc. Energy absorbing shock isolation stabilizing arrangement. 3,735,952, Cl. 248-358.00r.

Platz, Cloyce W. Carrier. 3,735,430, Cl. 5-118.000.

Pleines, Hanns Dieter. Device for applying a selected moisture content to a web made of a fibrous material. 3,735,929, Cl. 239-341.000.

Plessey Handel und Investment A.G.: *See—*
Rowe, James Howard, 3,736,465.

Plessey Handel und Investments A.G.: *See—*
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Marsh, Anthony, 3,736,579.
Turner, Horace George; and Wood, Robert Spurgeon, 3,736,072.

PLIUA Pharmaceutical and Chemical Works: *See—*
Butula, Ivan, 3,736,332.

Plock, Layne S.: *See—*
Morse, Haroid H.; Easterday, Cecil L.; Plock, Layne S.; and Morgan, Fred K., 3,736,132.

Plummer, William T., to Polaroid Corporation. Reflective imaging apparatus. 3,735,685, Cl. 95-42.000.

Polaroid Corporation: *See—*
Buckler, Sheldon A.; Kennedy, David P.; and Norland, Kenneth S., 3,735,680.
Conner, James M.; and Salvador, Henry J., 3,736,051.
Coughlan, Edward H., 3,735,684.
Plummer, William T., 3,735,685.
Thoenen, Earl R., 3,735,690.

Pollard, Derek, to Singer Company (U.K.) Limited, mesne. Method and apparatus for the production of textile fabrics and the fabric produced thereby. 3,735,606, Cl. 66-1.000.

Polsky, Nathan. Envelope. 3,736,006, Cl. 283-6.000.

Polymer Corporation Limited: *See—*
Wood, Lloyd Murray, 3,735,561.

Pomeroy, Richard S.: *See—*
Smola, Frank M.; and Pomeroy, Richard S., 3,735,689.

Popovici, Arcadia. Double spring bolt re-keyable padlock. 3,735,612, Cl. 70-38.00a.

Porter, Cecil Lloyd. Recycle power unit. 3,736,068, Cl. 415-89.000.

Porter, Milton; Kearns, Warren; Washek, Conrad; and Lambert, Paul, to Foster, L. B., Company. Methods for making bi-metallic pipe. 3,735,478, Cl. 29-477.300.

Possis Machine Corporation: *See—*
Hoffarth, Odell H.; and Schuette, Thomas L., 3,735,557.

Post, Hendrik Alle: *See—*
Lenders, Wilhelmus Leonard Louis; Post, Hendrik Alle; Sie, Tjwan Khing; Visscher, Johannes Mattheus; and Quirijnen, Marius, 3,735,698.

Post, Leo B.; Rosen, Herbert J.; and Zeh, J Howard, to Stauffer Chemical Company. Dust-free leavening agent. 3,736,151, Cl. 99-95.000.

Powell, Carl G.: *See—*
Lean, Eric G.; and Powell, Carl G., 3,736,044.

Powell, James C., to All-Steel Equipment Inc. Method for making knock-outs in electrical boxes formed of plastic material. 3,735,653, Cl. 83-1.000.

PPG Industries, Inc.: *See—*
Houser, Lloyd, 3,735,553.
Mosso, Paul R.; and Foote, James F., 3,736,272.

Pratt Manufacturing Corporation: *See*—
Pratt, Robert H., 3,735,551.

Pratt, Robert H., to Pratt Manufacturing Corporation. Apparatus for and method of packaging with gas flushing. 3,735,551, Cl. 53-22.00a.

Precision Valve Corporation: *See*—
Kerr, David; and Curtis, Willard S., 3,735,955.

Pripshtein, Boris Isaeivich: *See*—
Krolikov, Boris Zakharovich; Krylov, Jury Petrovich; Brod, Ilya Iosifovich; and Pripshtein, Boris Isaeivich, 3,735,437.

Procter & Gamble Company, The: *See*—
Gosselink, Eugene Paul; and Henderson, John H., 3,736,353.

Products Research & Chemical Corporation: *See*—
Gores, Kenneth W., 3,735,900.

Program Control Corporation: *See*—
Boyan, Edwin A., 3,736,409.

Programmatics, Inc.: *See*—
Ferguson, David E., 3,736,413.

Prostorov, Igor Semenovich; and Davydov, Vladimir Sergeevich. Piston ring. 3,735,992, Cl. 277-215.000.

Prosvirin, Artem Petrovich: *See*—
Nikolaev, Vasily Ilich; Eliseev, Alexandr Jurievich; Bogachev, Vladimir Petrovich; Prosvirin, Artem Petrovich; Konstantinopolsky, Vladimir Tonovich; and Belousov, Anatoly Nikolaevich, 3,735,912.

Provan, Alexander R., to Mobil Oil Corporation. Apparatus for printing on both sides of the lids of egg cartons. 3,735,697, Cl. 101-37.000.

Provasnik, Robert: *See*—
Major, James M.; Truscello, Peter J.; and Provasnik, Robert, 3,736,499.

Pryanishnikov, Igor Stepanovich: *See*—
Lakomsky, Viktor Iosifovich; Zabarilo, Oleg Semenovich; Torkhov, Gennady Fedorovich; Pryanishnikov, Igor Stepanovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; and Zhuchin, Vladimir Nikoforovich, 3,736,361.

Pugh, Charles D., to Burlington Industries, Inc. Driver circuitry. 3,736,473, Cl. 317-137.000.

Pullman Incorporated: *See*—
Glassmeyer, John J., 3,735,713.

Pupp, Hanns-Peter: *See*—
Weinger, Gerhard; and Pupp, Hanns-Peter, 3,736,451.

Puskas, William L., to Branson Instruments, Incorporated. Failure detection circuit for ultrasonic apparatus. 3,736,523, Cl. 331-64.000.

Puxkandl, Peter: *See*—
Ruthner, Othmar; Puxkandl, Peter; and Fastnacht, Guido, 3,735,564.

Puzik, Otto V., to Willow Hill Industries, Inc. Wheel lug. 3,735,719, Cl. 113-116.00h.

Pye, Donald George, to Du Pont de Nemours, E. I., and Company. Method of coating CrO_2 with alumina. 3,736,181, Cl. 117-234.000.

Pye Limited: *See*—
Bergen, Stephen Archbold; and Dubsky, Hanniel Elidad, 3,735,570.

Quaker Oats Company, The: *See*—
Bosch, Hans Albert, 3,735,960.

Queener, Carl A.: *See*—
Davidge, Ronald V.; Hobgood, George W., Jr.; Queener, Carl A.; Spears, Jesse W.; and Thompson, Bernard G., 3,736,055.

Quinn, Thomas: *See*—
Mack, William T.; and Quinn, Thomas, 3,735,813.

Quirijnen, Marius: *See*—
Lenders, Wilhelmus Leonard Louis; Post, Hendrik Alle; Sie, Tjwan Khing; Visscher, Johannes Mattheus; and Quirijnen, Marius, 3,735,698.

Race, Andras: *See*—
Glass, Marvin I.; Bruck, Joseph; and Race, Andras, 3,735,986.

Radke, Arthur O., to Oil Products Company. Molded seat cushion with cast skin and insert receiving recess. 3,736,022, Cl. 297-453.000.

Radovic, Zeljko: *See*—
Stroppel, Herbert; and Radovic, Zeljko, 3,736,389.

Ragland, Evan L., to American Reditel Corporation. Hand held apparatus for sensing data bits carried on a sheet. 3,736,410, Cl. 235-61.11e.

Rains, Stephen D., to Bausch & Lomb Incorporated. Immunoelectrophoresis gel tray. 3,736,100, Cl. 23-253.00r.

Raleigh, Ronald George: *See*—
Collier, Susan Starr; Gilman, Paul Brewster, Jr.; Linschitz, Henry; and Raleigh, Ronald George, 3,736,140.

Rambo, Sheldon I., to Westinghouse Electric Corporation. Means for generating a flat-topped pulse with sine-squared rise and fall characteristics. 3,736,589, Cl. 343-17.10r.

Rambosek, George M.: *See*—
Schmit, Paul F.; and Rambosek, George M., 3,736,298.

Ramins, Gunars H. Pocket rake for gable siding concealing a roof edge. 3,735,538, Cl. 52-94.000.

Ramsey, Robert W., to Heil-Quaker. Air conditioner condensing system control. 3,735,602, Cl. 62-184.000.

Ramsey, William W. Device for driving stakes. 3,735,819, Cl. 173-21.000.

Ranallo, Henry U.: *See*—
Wiltshire, Arthur J.; Ranallo, Henry U.; and Czumber, Frank E., 3,736,086.

Rand Corporation, The: *See*—
Stratton, Roy H., 3,736,135.

Rank Organisation Limited, The: *See*—
Cook, Gordon Henry; and Merigold, Peter Arnold, 3,736,048.

Raseman, Chad J.: *See*—
Delano, Richard; and Raseman, Chad J., 3,736,172.

Rasmusson, Gary H.: *See*—
Arth, Glen E.; and Rasmusson, Gary H., 3,736,317.

Rath, Virgil K. Portable luggage dolly. 3,735,996, Cl. 280-35.000.

Ravitts, Richard B., to Richards of Rockford, Inc. Liquid spray device with fixed and rotatable diffusers. 3,735,926, Cl. 239-16.000.

Raytheon Company: *See*—
Mohr, Max C.; Malancon, Leo; and Monaghan, Stephen R., 3,736,535.
Toledo, Emil, 3,736,576.

RCA Corporation: *See*—
Alphonse, Gerard Argant, 3,736,533.
Anderson, Charles Hammond; Feingold, Bernard Robert; and Sabisky, Edward Stephen, 3,736,518.
Baugher, Dale Milton; and Awkward, Kenneth Walter, 3,736,469.
Channin, Donald Jones; and Hammer, Jacob Meyer, 3,736,525.
Cullen, Glenn Wherry; Bolin, Stephen Ray; Morrison, Andrew David; and Wang, Chih Chun, 3,736,158.
Lachocki, Eugene, 3,736,496.
Norris, Peter Edward; and Micheletti, Frank Benjamin, 3,735,482.
Veloric, Harold Seymour, 3,736,478.
Vossen, John Louis; and O'Neill, John Joseph, 3,736,406.
Watson, James Power, 3,735,976.

RCI Corporation: *See*—
Wright, Carl Macey, 3,736,412.

Read, Ronald G.; Sikora, Norbert L.; and Verge, Kenneth W., to Bendix Corporation, The. Drive control and hold-in arrangement for a rotary actuator. 3,736,078, Cl. 418-60.000.

Reardon, Robert: *See*—
Lamberti, Vincent; and Reardon, Robert, 3,736,339.

Recht, Howard L.: *See*—
Ghassemi, Masood; Recht, Howard L.; and Kleber, Eugene V., 3,736,255.

Redken Laboratories, Inc.: *See*—
Kent, Paula Jane; and McCollough, Arthur R., 3,736,064.

Redmond, Joseph M.: *See*—
Blount, Frederick T.; Geller, Henry A.; Moore, Richard D.; Leung, Howard; Lewis, Scott C.; and Redmond, Joseph M., 3,736,573.

Reed, John M. Therapeutic exercising apparatus. 3,735,754, Cl. 128-25.00r.

Reed, Philip E. Suspended movable scaffold. 3,735,951, Cl. 248-340.000.

Reed Rolled Thread Die Company: *See*—
Zook, Elmer S., 3,735,618.

Reed, Russell, Jr.: *See*—
Dinsdale, Vern Thomas; Reed, Russell, Jr.; and Meyer, Robert E., 3,736,206.

Reese, William Rubin: *See*—
Passons, William Erby; and Reese, William Rubin, 3,735,715.

Reeves, Adam A.: *See*—
Jones, John B., Jr.; and Reeves, Adam A., 3,736,247.

Reeves, John R.; Bogel, George F.; and Thompson, Francis T., to Westinghouse Electric Corporation. Ground fault interrupter apparatus. 3,736,468, Cl. 311-18.00d.

Refouvelet, Joseph-Paul-Marie; and Francois, Joseph Jean, to Etat Francais. High-speed commutation device for heavy power applications. 3,736,545, Cl. 338-13.000.

Reilly, Joseph R., to Monsanto Company. Apparatus for finishing hollow blow molded articles. 3,736,091, Cl. 524-326.000.

Reist, Walter, to Ferag, Fehr & Reist AG. Method and apparatus for turning flat structures, especially newspapers. 3,735,977, Cl. 271-75.000.

Remane, Roger, to Application des Gaz. Valve devices for pressurized containers. 3,735,903, Cl. 222-402.160.

Remley, Kenneth Herald: *See*—
Hermann, David Trimble; and Remley, Kenneth Herald, 3,736,216.

Renaudin, Yves: *See*—
Mevel, Yves; and Renaudin, Yves, 3,736,384.

Rennels, Larry W.; and Wilson, William J., to Motorola, Inc. Receiving antenna for miniature radio receiver. 3,736,591, Cl. 343-702.000.

Reschke, Donald C.: *See*—
Elmer, James W.; and Reschke, Donald C., 3,735,470.

Research Corporation: *See*—
Parekh, Amritlal C.; and Jung, David H., 3,736,263.
Parekh, Amritlal C.; and Jung, David H., 3,736,340.

Restaurant Technology, Inc.: *See*—
Binks, Chester; and Herbert, Ronald M., 3,735,749.

Rex Products, Inc.: *See*—
Pearch, Max W., 3,735,968.

Rexroth GmbH: *See*—
Heid, Walter, 3,735,780.

Rey-Bellet, Gerald; and Spiegelberg, Hans, to Hoffman-La Roche Inc. Intermediates for tricyclic amines. 3,736,351, Cl. 260-501.210.

Reynolds, Alex B.: *See*—
Ticketi, Edward F., 3,735,775.

Reynolds, Raymond B., to Andis Clipper Co. Tension adjustment for vibratory tool. 3,735,488, Cl. 30-210.000.

Reynolds, Robert J.; and Deyerl, Herman F. System for operating electrically powered vehicles on a roadbed. 3,736,484, Cl. 318-587.000.

Reznicek, Frank. Support and positioning dolly for dual wheels. 3,735,882, Cl. 214-332.000.

Rhee, Seong K.; and Kiwak, Robert S., to Bendix Corporation, The. Method of fusion-bonding parts by partial liquid phase formation. 3,735,479, Cl. 29-498.000.

Richard, Walter R.: *See—*
Bush, Henry J.; Entzminger, John N., Jr.; and Richard, Walter R., 3,736,587.

Richards, Donald K.: *See—*
Fallon, William H.; Rieger, Paul P.; and Richards, Donald K., 3,736,490.

Richards, Joseph M.; and De Groff, Mark E., to Medco Products Co., Inc. Duplex ultrasound generator and combined electrical muscle stimulator. 3,735,756, Cl. 128-24.00a.

Richards, Louis R.; and Lekan, Henry N., to Formax, Inc. Rolling machine for stuffed meat "birds" and other rolled articles. 3,735,694, Cl. 99-450.100.

Richards of Rockford, Inc.: *See—*
Ravitts, Richard B., 3,735,926.

Richter, Herbert: *See—*
Maggio, Joseph P.; and Richter, Herbert, 3,735,424.

Ridderstrale, Carl-Erik: *See—*
Standell, Per-Olof; and Ridderstrale, Carl-Erik, 3,735,656.

Rieger, Paul P.: *See—*
Fallon, William H.; Rieger, Paul P.; and Richards, Donald K., 3,736,490.

Rijnders, Johannes, to U.S. Philips Corporation. Halogen motorcar lamp. 3,736,452, Cl. 313-115.000.

Rikagaku Kenkyusho: *See—*
Yanagita, Masaya; Kitahara, Masao; and Abe, Yoshimichi, 3,736,354.

Risher, Frederick L. Razor blade with integrated supplemental guard. 3,735,486, Cl. 30-78.000.

Rizzo, Angelo: *See—*
Von Brimer, Joe W., Jr., 3,735,717.

Robb, David L.: *See—*
Mullin, Richard W.; and Robb, David L., 3,735,954.

Robblee, Alexander R.: *See—*
Mieligan, Larry P.; Robblee, Alexander R.; Wood, John C.; and Chakrabartty, Sujit K., 3,736,146.

Roberts, Richard W., to Borg-Warner Corporation. Hydrostatic transmission mechanism. 3,735,646, Cl. 74-687.000.

Robinson, Frank: *See—*
Flavell, John; Betts, Max William; and Robinson, Frank, 3,735,812.

Rodder, Jerome A. Spirometer. 3,735,752, Cl. 128-2.080.

Rodriguez, David: *See—*
Pierce, Albert R., III.; and Rodriguez, David, 3,735,734.

Rogers, Joseph S., Jr.; and Forseth, Glenn J., to Phillips Petroleum Company. Carbon black reactor. 3,736,102, Cl. 23-259.500.

Rogers, Laurence B.; Neumann, Malcolm A.; and Dolan, Dwain K., to Cubic Corporation. Handheld automatic wire electrode transport unit supplied with power from a single rectifier unit. 3,736,403, Cl. 219-131.00f.

Rogers, Richard E.: *See—*
Brownell, Roy D.; and Rogers, Richard E., 3,735,876.

Rohm & Haas Company: *See—*
Scott, Joseph David; and De Tommaso, Gabriel L., 3,736,286.

Rolfsen, Henrik Pande, to Thune-Eureka A/S Drammensveien. Pneumatic temperature releaser. 3,735,773, Cl. 137-74.000.

Rollinson, Kenneth. Dispensing hopper. 3,735,899, Cl. 222-135.000.

Rolls-Royce Limited: *See—*
Mullins, John Albert, 3,735,946.

Roman, Ronald J.: *See—*
Carpenter, Robert D.; and Roman, Ronald J., 3,735,869.

Romani, Giorgio Augusto: *See—*
Nava, Riccardo Giuseppe; Romani, Giorgio Augusto; Soffientini, Duccio Riccardo; Subert, Aldo Rodolfo; Ubertazzi, Alessandro Giuseppe; and Vetter, Peter Roman, 3,735,580.

Romero, Roderic: *See—*
Braun, Edwin Julius; and Romero, Roderic, 3,736,382.

Roper, Jarold D. Composite non-sweat water tank. 3,735,895, Cl. 220-63.00r.

Rosales, Louis A., to Western Filament Inc. Chevron bundle tie. 3,735,449, Cl. 24-16.0pb.

Rosen, Herbert J.: *See—*
Post, Leo B.; Rosen, Herbert J.; and Zeh, J Howard, 3,736,151.

Rosenthal, Louis A.; and Davis, Donald A., to Union Carbide Corporation. Film treating method. 3,736,492, Cl. 321-45.00r.

Rosenthal, Louis A.; and Davis, Donald A., to Union Carbide Corporation. Film treating process. 3,736,493, Cl. 321-45.00r.

Rosenthal, Louis A.; and Davis, Donald A., to Union Carbide Corporation. Apparatus for film treatment. 3,736,494, Cl. 321-45.00r.

Roser, Gerhard K., to Weber Marking Systems, Inc. Tire ring drive for label printers. 3,735,700, Cl. 101-228.000.

Roslen, Georg, to Schuco-Spielwarenwerke Schreyer & Co. Noise producing device. 3,735,529, Cl. 46-232.000.

Ross, Abe D. Sheet feeder and spreader means. 3,735,512, Cl. 38-143.000.

Ross, Lee F.; Wilkinson, James E.; Craig, Fred A.; and Hudson, Allan M., to Thiokol Chemical Corporation. Apparatus for molding a rigid product from synthetic resinous materials. 3,736,089, Cl. 425-174.400.

Rossi, Silvano, to Roussel-UCLAF. 1,2,5-Benzotriazepin-4-ones and their preparation. 3,736,316, Cl. 260-239.30b.

Rostock, Joachim: *See—*
Lingg, Gerhard; Gottstein, Norbert; and Rostock, Joachim, 3,735,853.

Roussel-UCLAF: *See—*
Martel, Jacques; and Toromanoff, Edmond, 3,736,319.
Rossi, Silvano, 3,736,316.

Rowe, James Howard, to Plessey Handel und Investment A.G. Voltage supply arrangements. 3,736,465, Cl. 315-239.000.

RTE Corporation: *See—*
Sankey, Edward L., 3,736,505.

Rubin, Jacob C.: *See—*
Sukel, Gerald J.; and Rubin, Jacob C., 3,735,975.

Rublack, Wilfred D.: *See—*
Jones, Michael B.; and Rublack, Wilfred D., 3,735,677.

Rudszinal, Willy: *See—*
Kruse, Friedel; Wahle, Gunter; Erdmann, Otto; and Rudszinal, Willy, 3,735,767.

Ruegg, Edwin, to Maschinenfabrik Giesserei Nelstal AG. Mold closing unit with separately acting rotary and fluid pressure piston drives. 3,736,087, Cl. 425-137.000.

Rumbaugh, Don K. Condition sensing assembly positioned as washer. 3,736,394, Cl. 200-158.000.

Rumpel, Delbert O., to Honeywell Inc. Patrol tour system. 3,736,561, Cl. 340-147.00r.

Rundkvist, Konstantin Alexandrovich: *See—*
Fedotov, Alexandr Mikhailovich; Alexeev, Evgeny Stepanovich; Denisov, Genrikh Alexandrovich; Rundkvist, Konstantin Alexandrovich; and Skrunde, Artur Avgustovich, 3,735,868.

Runge, Detlev; and Gotz, Werner, to Bosch, Robert, G.m.b.H. Arrangement for preventing the locking of wheels of motor vehicles. 3,736,435, Cl. 307-10.00r.

Rushton, Harold: *See—*
Blackledge, Keith; and Rushton, Harold, 3,735,999.

Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method and apparatus for manufacturing continuous filaments. 3,736,116, Cl. 65-2.000.

Russell, Thomas R., to Flintkote Company, The. Method of making pressure-sensitive hot-melt adhesives. 3,736,281, Cl. 260-27.00r.

Rutherford, Robert E., Jr., to Columbia Broadcasting System, Inc. Off-axis return beam tube. 3,736,460, Cl. 315-11.000.

Ruthner, Othmar; Puxkandl, Peter; and Fastnacht, Guido, to Vereinigte Osterreischische Eisen-und Stahlwerke Aktiengesellschaft. Apparatus for making a filled flexible tubing in a continuous operation. 3,735,564, Cl. 53-177.000.

Sabet, Huschang. Rotary-piston internal-combustion engine. 3,736,080, Cl. 418-34.000.

Sabisky, Edward Stephen: *See—*
Anderson, Charles Hammond; Feingold, Bernard Robert; and Sabisky, Edward Stephen, 3,736,518.

Sada, Charles A.: *See—*
Mikulicic, Gunther M.; Katz, Yoram; and Sada, Charles A., 3,735,435.

Sadler, Fred S.; and Heinrichs, Frank W., to McGraw-Edison Company. Cellulose material treated with a cellulose derivative, diglycolamine and an alkylketene dimer. 3,736,178, Cl. 117-157.000.

Saint-Gobain Industries: *See—*
Parnet, Bernard, 3,736,375.

Saito, Shizuo: *See—*
Hirata, Akira; Kobayashi, Akio; Sakamoto, Eiichi; and Saito, Shizuo, 3,736,145.

Sakamoto, Eiichi: *See—*
Hirata, Akira; Kobayashi, Akio; Sakamoto, Eiichi; and Saito, Shizuo, 3,736,145.

Sakurama, Naoki, to Atomic Power Development Associates, Inc. Hold-down arrangement for nuclear reactor fuel subassemblies. 3,736,226, Cl. 176-50.000.

Salberg, Mervyn, to Merco International Ltd. Sharpening of ice skates. 3,735,533, Cl. 51-34.00e.

Salemme, Robert M., to General Electric Company. Sulfonated polyxylylene oxide as a permselective membrane for water vapor transport. 3,735,559, Cl. 55-16.000.

Salomon, Georges P. J. Rear holding device for ski boots. 3,735,995, Cl. 280-11.50t.

Salvador, Henry J.: *See—*
Conner, James M.; and Salvador, Henry J., 3,736,051.

Sambucetti, Carlos J., to International Business Machines Corporation. Electrochemical molecular display and writing. 3,736,043, Cl. 350-160.00r.

Samcoe Holding Corporation: *See—*
Cecere, Andrew P., 3,735,444.

Sandvik Aktiebolag: *See—*
Sondergaard, Harald, 3,735,630.

Sankey, Edward L., to RTE Corporation. Electrical connector having a voltage test point. 3,736,505, Cl. 324-133.000.

Sano, Hisumi: *See—*
Tokuyama, Takashi; Tsuchimoto, Takashi; Ikeda, Takahide; Nishimatsu, Shigeru; and Sano, Hisumi, 3,736,192.

Sasaguri, Kiichiro: *See—*
Kobayashi, Hidehiko; Sasaguri, Kiichiro; Komoto, Hiroshi; Kawashima, Sukeo; and Kohno, Mitsuo, 3,736,294.

Sass, Allan; Finney, Clem; McCarthy, Harry; and Kaufman, Paul, to Occidental Petroleum Corporation. Process of pyrolyzing and desulfurizing sulfur bearing agglomerative bituminous coal. 3,736,233, Cl. 201-17.000.

Saubestre, Edward B.: *See—*
Stone, Frank E.; and Saubestre, Edward B., 3,736,156.

Saunders, David R.: *See—*
Gofton, Ross H.; Koh, John K.; Newton, Edmund A.; and Saunders, David R., 3,735,691.

Sawyer, Edgar W., Jr., to Engelhard Minerals & Chemicals Corporation. Method for processing kaolin clay. 3,736,165, Cl. 106-288.00b.

Sayre, Jack L., Jr.; and Fishel, Kenneth R., to United States of America, Navy. Hydraulic claw with locking mechanism. 3,736,018, Cl. 294-88.000.

Scapa Dryers, Inc.: *See—*
Haythornthwaite, James, 3,735,451.

Scarrott, Gordon George; and Steptoe, Brian John. Positioning apparatus. 3,736,485, Cl. 318-594.000.

Schaefer Equipment Company: *See—*
Cale, Roland E., 3,735,626.

Schafer, Conrad B.: *See—*
Dunipace, Donald W.; McCown, William E.; and Schafer, Conrad B., 3,736,117.

Schafer, Gerd, to Siemens Aktiengesellschaft. Apparatus for protection of a gas jet generator. 3,735,592, Cl. 60-203.000.

Scharfen, Hans, to Forkardt, Paul, Kommanditgesellschaft. Headstock for turning machines equipped with indexable chucks. 3,735,652, Cl. 82-30.000.

Scheler, Siegfried: *See—*
Frommeld, Hans-Dieter; Scheler, Siegfried; and Brauninger, Arno, 3,736,143.

Schieber, Gerhard, to Schmidt, Karl, GmbH. Ring carrier for light alloy pistons. 3,735,746, Cl. 123-193.00p.

Schild, A., S.A.: *See—*
Fluck, Josef; and Zaugg, Roland, 3,735,581.

Schiller, Thomas P.: *See—*
Hurschman, Alfred A.; and Schiller, Thomas P., 3,735,761.

Schindler, Herbert: *See—*
Loffler, Tilo; and Schindler, Herbert, 3,735,438.

Schipitsh, Stephen J.: *See—*
Huppert, Karl H.; and Schipitsh, Stephen J., 3,735,800.

Schlatter, Gerald Lance, to International Telephone and Telegraph Corporation. Function generator and components thereof. 3,735,633, Cl. 73-32.000.

Schlicht, Raymond Charles: *See—*
Cross, Edward Albert; McCoy, Frederick Charles; and Schlicht, Raymond Charles, 3,736,256.

Schloemann Aktiengesellschaft: *See—*
Schmoll, Heinz; and Jenke, Dieter, 3,735,631.

Schlumberger, N., & Cie: *See—*
Herubel, Jean-Frederic, 3,735,450.

Schlumberger Technology Corporation: *See—*
Cubberly, Walter E., Jr., 3,736,558.

Schmalzgruber, Bruno: *See—*
Detterbeck, Heinrich; Ackermann, Josef; and Schmalzgruber, Bruno, 3,735,750.

Schmid, Wolfgang: *See—*
Hahner, Reinhard; and Schmid, Wolfgang, 3,735,821.

Schmidt, Erich A.: *See—*
Schmidt, Volker; and Schmidt, Erich A., 3,735,657.

Schmidt, Felix Helmut: *See—*
Winter, Werner; Thiel, Max; Stach, Kurt; Schmidt, Felix Helmut; and Stork, Harald, 3,736,334.

Schmidt, Karl, GmbH: *See—*
Schieber, Gerhard, 3,735,746.

Schmidt, Volker; and Schmidt, Erich A. Apparatus for cutting strips of material. 3,735,657, Cl. 83-209.000.

Schmidt-Hatting, Wolfgang: *See—*
Bohner, Hans; and Schmidt-Hatting, Wolfgang, 3,736,244.

Schmidt-Thomee, Georg: *See—*
Kinkel, Klaus; Pfannmueller, Helmut; Schmidt-Thomee, Georg; Metzner, Franz Georg; and Gierth, Volker, 3,736,305.

Schmit, Paul F.; and Rambosek, George M., to Minnesota Mining and Manufacturing Company. Polyisocyanurate preparation using double alkoxide catalysts. 3,736,298, Cl. 260-77.5nc.

Schmoll, Heinz; and Jenke, Dieter, to Schloemann Aktiengesellschaft. Hydraulically powered counter-blow hammer. 3,735,631, Cl. 72-407.000.

Schneider, J. V.: *See—*
Monpetit, Louis A.; Gueret, Herve; Schneider, J. V.; and Ufnalewski, J. W., 3,735,927.

Schneider, Jean-Claude, to Fabrique d'Horlogerie Chs. Tissot et Fils S.A. Calendar watch day-date driving and correcting means. 3,735,582, Cl. 58-58.000.

Schneider, Jury Gdalievich. Method of making grooves on surface of articles and device for its realization. 3,735,615, Cl. 72-75.000.

Schoen, Karl: *See—*
Finizio, Michael; and Schoen, Karl, 3,736,323.

Schoenholz, Daniel; and Perl, Martin M., to Foremost-McKesson, Inc. Denture adhesive. 3,736,274, Cl. 260-17.00r.

Schoger, H. L., & Associates, Inc.: *See—*
Way, James A., 3,735,965.

Scholemann Aktiengesellschaft: *See—*
Hoffmann, Bernd, 3,735,966.

Scholl, Karl L.: *See—*
Henke, Erich G.; Braun, Helmut F.; Scholl, Karl L.; and Schubert, Rudolf, 3,735,669.

Scholz, Hans-Joachim: *See—*
Lorenz, Henry; and Scholz, Hans-Joachim, 3,735,446.

Schon & Cie Gesellschaft mit beschrankter Haftung: *See—*
Loffler, Tilo; and Schindler, Herbert, 3,735,438.

Schonstedt, Erick O., to Schonstedt Instrument Company. Series string flux gate magnetic sensor apparatus with additive response. 3,736,502, Cl. 324-43.00r.

Schonstedt Instrument Company: *See—*
Schonstedt, Erick O., 3,736,502.

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Schweikart, Horst, to Gehap Gesellschaft fur Handel und Patentverwertung mbH & Co., KG. Contactless device for actuating a signal. 3,736,497, Cl. 323-80.000.

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Scott, Joseph David; and De Tommaso, Gabriel L., to Rohm & Haas Company. Aqueous pigmented acrylic dispersion compositions having improved rheology. 3,736,286, Cl. 260-29.6rw.

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Smith, Buford Bryan. Roll of plastic film aprons. 3,735,865, Cl. 206-58.000.
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Smith, Robert L., to Northrop Corporation. Portable beverage dispensing apparatus. 3,735,898, Cl. 222-129.00h.
Smith, Wille M. Specific variable ratio actuator. 3,735,643, Cl. 74-89.160.
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Gump, Klaus Hannes; and Stuetz, Dagobert Engelbert, 3,736,310.

Stumpf, Gunter. Feed device for cloth folding machines. 3,735,886, Cl. 214-730.000.

Stumpf, Gunter Otto. Apparatus for folding fabric material in layers. 3,735,974, Cl. 270-31.000.

Subert, Aldo Rodolfo: *See—*
Nava, Riccardo Giuseppe; Romani, Giorgio Augusto; Soffientini, Duccio Riccardo; Subert, Aldo Rodolfo; Ubertazzi, Alessandro Giuseppe; and Vetter, Peter Roman, 3,735,580.

Subramanian, Pallatheri M., to Du Pont de Nemours, E. I., and Company. Process for improving the thermal stability of polyvinyl alcohol with a polymeric polycarboxylic acid. 3,736,311, Cl. 260-91.3pv.

Suggitt, Robert M., to Texaco Inc. Stabilized palladium-carbon catalysts. 3,736,265, Cl. 252-445.000.

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Sukel, Gerald J.; and Rubin, Jacob C., to Eastman Kodak Company. Apparatus for fan fold stacking continuous strips of material. 3,735,975, Cl. 270-61.00f.

Sullivan, Eugene F., to Keystone Consolidated Industries, Inc. Method for adhering materials together. 3,736,205, Cl. 156-291.000.

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Sundquist, Charles T. Heater pumps for distilland heating with hot distillate. 3,736,235, Cl. 202-236.000.

Sunds Aktiebolag: *See—*
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Sussmann, Erhard, to Siemens Aktiengesellschaft. Device for the precipitation of layers of semiconductor material. 3,735,727, Cl. 118-48.000.

Sutkowski, Joseph. Theft prevention device for motor vehicles. 3,735,833, Cl. 180-112.000.

Suzukawa, Yuichi; Kono, Hisashi; Nakai, Shigeyuki; Ninomiya, Kohei; and Kuribayashi, Atsushi, to UBE Industries, Ltd. Method of and apparatus for fluidizing solid particles. 3,735,498, Cl. 34-10.000.

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Swann, Jimmie R., to Cosden Oil & Chemical Company. Plastic cutting apparatus. 3,735,658, Cl. 83-433.000.

Sweet, Richard G., to Varian Associates. Bacterial colony counting method and apparatus. 3,736,432, Cl. 250-222.0pc.

SWF Spezialfabrik fuer Autozubehoer Gustav Rau GmbH: *See—*
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Swift & Company: *See—*
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Swisher, George W., Jr.; Smith, Don W.; and Spivey, Gordon L., to CMI Corporation. Motor-grader implements. 3,735,818, Cl. 172-785.000.

Swiss Aluminium Ltd.: *See—*
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Takagi, Tooru, to Orient Watch Co., Ltd. Water-proof wrist watch case having non-circular glass profile. 3,735,585, Cl. 58-90.00r.

Takaia Kogyo Kabushiki Kaisha: *See—*
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Talley, Robert E., to Bucyrus-Erie Company. Excavator crawler mechanism. 3,735,830, Cl. 180-9.500.

Tamura, Shoji: *See—*
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Tatge, Harlan H. Helical plow. 3,735,817, Cl. 172-532.000.

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Tavernier, Georges, to Societe Nounelle Baele-Gangloff. Label gumming and dispensing device. 3,735,731, Cl. 118-220.000.

Taylor, Gordon George, to Monrick Holdings Limited. Oscillatory device for photographic processing. 3,735,961, Cl. 259-72.000.

Taylor, Howard H., Jr., to Hercules Incorporated. Water-based adhesive from vinyl acetate-ethylene copolymer emulsion containing mercaptoalkyl silane. 3,736,283, Cl. 260-29.6mq.

Taylor, Kenneth James: *See—*
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Taylor, Robert A. Storage container for granular materials. 3,735,901, Cl. 222-196.000.

Te Velde, Ties Siebolt, to U.S. Philips Corporation. Method of manufacturing electronic devices. 3,736,476, Cl. 317-234.00r.

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Tempe, Andre. Method of disposing and reclaiming solid refuse. 3,736,120, Cl. 71-9.000.

Terada, Hiromu, to Nippon Pneumatic Manufacturing Co., Ltd. Impace motive implement. 3,735,823, Cl. 173-119.000.

Terada, Kenji: *See—*
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Teraoka, Shoichi. Method for molding bowl-shaped articles. 3,736,201, Cl. 156-145.000.

Tersch, Richard W., to Lear Siegler, Inc. Gear roll chamfering. 3,735,619, Cl. 72-98.000.

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Thaler, Kunibert. Building fascia. 3,735,540, Cl. 52-94.000.

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Theatre Vision, Inc.: *See—*
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Theis, James V., Jr. Kite. 3,735,949, Cl. 244-155.00a.

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Thomas, Lucien Antoine Yves Joseph. Locking means. 3,735,835, Cl. 180-114.000.
Thomas, Richard R. Fishing lure. 3,735,522, Cl. 43-42.280.
Thompson, Bernard G.: *See—*
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Thompson, John T.; and Gillemot, George W. Method and accessory for testing the serviceability of telephone conductors. 3,736,387, Cl. 179-175.000.
Thompson, John T.; and Gillemot, George W. Method and accessory for testing the serviceability of telephone conductors. 3,736,388, Cl. 179-175.000.
Thompson, Joseph J.: *See—*
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Ticketi, Edward F., 50% to Reynolds, Alex B. Pipe fitting. 3,735,775, Cl. 137-318.000.
Tieco Products, Inc., mesne: *See—*
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Tokunaga, Ikuo, to Kabushiki Kaisha Suwa Seikosha. Shock-resistant watchcase for a portable watch. 3,735,584, Cl. 58-88.00c.
Tokuyama, Takashi; Tsuchimoto, Takashi; Ikeda, Takahide; Nishimatsu, Shigeru; and Sano, Hisumi, to Hitachi, Ltd. Integrated circuit and method of making the same. 3,736,192, Cl. 148-1.500.
Tokyo Seimitsu Sokki Kabushiki Kaisha: *See—*
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Tranel, Lester J., to Olin Corporation. Method and apparatus for deforming a flat on parts of metal strip-type tubing while leaving other parts underformed. 3,735,720, Cl. 113-118.00d.
Treuner, Uwe D., to Squibb, E. R., & Sons, Inc. Arysulfonylformamidoximes. 3,736,356, Cl. 260-562.00r.
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Vanderlinde, Walpy. Method and device for anchoring tie-rods in ground. 3,735,541, Cl. 52-98.000.

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Lakomsky, Viktor Iosifovich; Zabarilo, Oleg Semenovich; Torkhov, Gennady Fedorovich; Pryanishnikov, Igor Stepanovich; Topilin, Valentin Vasilievich; Kljuev, Mikhail Markovich; and Zhuchin, Vladimir Nikoforovich, 3,736,361.

Ziegler, Horst; and Thill, Albert, to Volkswagenwerk Aktiengesellschaft. Device for positioning a seating arrangement especially in motor vehicles with fine adjustments. 3,736,025, Cl. 297-369.000.

Ziegler, Horst; and Thill, Albert, to Volkswagenwerk Aktiengesellschaft. Device for positioning a seating arrangement especially in motor vehicles. 3,736,026, Cl. 297-379.000.

Zimmer Aktiengesellschaft: *See*—
Keinath, Hans; Kroger, Klaus; and Lauerbach-Lehmeier, Robert, 3,735,959.

Zindler, Jerrold, to Instrumentation Laboratory, Inc. Dispenser apparatus. 3,735,902, Cl. 222-363.000.

Zivi, Samuel M.; and Humberstone, Gordon H., to TRW Data Systems, Inc. Coherence extender for Q-switched lasers for use in holography. 3,736,040, Cl. 350-3.500.

Zocco, George, to Slumberland Products Co. Spring construction. 3,735,431, Cl. 5-267.000.

Zook, Elmer S., to Reed Rolled Thread Die Company. Method and apparatus for internal gear rolling. 3,735,618, Cl. 72-91.000.

Zook, James D., to Honeywell Inc. Optical spot size changer. 3,736,046, Cl. 346-74.0mt.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF MAY, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Artzer, Charles W., and A. M. DiCicco. Center plate assembly. Re. 27,651, 5–29–73, Cl. 308—137.

Baum, Gilbert. Method and apparatus for the display and redecoration of signals. Re. 27,650, 5–29–73, Cl. 340—3.

Cohen, Herman. Process for preserving citrus fruit food products. Re. 27,646, 5–29–73, Cl. 99—186.

DiCicco, Alexander M.: *See*—
Artzer, Charles W., and DiCicco. Re. 27,651.

Drummond Instrument Co.: *See*—
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Drummond, Michael E., and J. E. Robinson, to Drummond Instrument Co. Re. 27,645, 5–29–73, Cl. 222—49.

Formica Corp.: *See*—
Kelly, Peter B., and Grosheim. Re. 27,644.

Grosheim, Gene E.: *See*—
Kelly, Peter B., and Grosheim. Re. 27,644.

Grussen, Jean. Plastic bottle cap with integral handle. Re. 27,648, 5–29–73, Cl. 215—41.

Kelly, Peter B., and G. E. Grosheim, to Formica Corp. Decorative laminate backcoated with a polyvinyl acetate. Re. 27,644, 5–29–73, Cl. 161—162.

Levenhagen, Alvin W., to North American Rockwell Corp. Nesting and stacking tray. Re. 27,649, 5–29–73, Cl. 220—97.

Medtronic, Inc.: *See*—
Mirowski, Mieczyslaw, Mower, and Staewen. Re. 27,652.

Mirowski, Mieczyslaw, M. M. Mower, and W. S. Staewen, to Medtronic, Inc. Electronic standby defibrillator. Re. 27,652, 5–29–73, Cl. 128—419.

Mower, Morton M.: *See*—
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North American Rockwell Corp.: *See*—
Levenhagen, Alvin W. Re. 27,649.

Oskam, Aane A., to Technische Industrie A. C. Koot N.V. Electric adjusting means for azimuth and elevation adjustment. Re. 27,653, 5–29–73, Cl. 350—289.

Robinson, John E.: *See*—
Drummond, Michael E., and Robinson. Re. 27,645.

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Stair, Eugene V. Mower cutting device. Re. 27,647, 5–29–73, Cl. 56—295.

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Armstrong, David L., to Armstrong Nurseries, Inc. Rose plant. 3,348, 5–29–73, Cl. 15.

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Garabedian, John M., to Superior Farming Co. Apricot tree. 3,345, 5–29–73, Cl. 39.

Jackson & Perkins Co.: *See*—
Warriner, William A. 3,347.

Lee, Charles H., to Monrovia Nursery Co. Raphiolepis plant. 3,349, 5–29–73, Cl. 54.

Monrovia Nursery Co.: *See*—
Lee, Charles H. 3,349.
Skimina, Conrad A. 3,344.

Moore, Ralph S. Miniature rose plant. 3,346, 5–29–73, Cl. 7.

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Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,347, 5–29–73, Cl. 28.

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Altemare, Kenneth. Hairdresser's tray. 227,042, 5–29–73, Cl. D86—10.

Ardolino, Anthony A., to Howard Research and Development Corp. Casing and controls for dual telephone communicator. 227,014, 5–29–73, Cl. D26—14.

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Bailey, H. N., & Associates: *See*—
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Bajusz, Harold F., to Accutec Inc. Pen. 227,037, 5–29–73, Cl. D74—17.

Bajusz, Harold F., to Accutec Inc. Combination of pen and housing for thermometer or the like. 227,038, 5–29–73, Cl. D74—17.

Baker, Raymond W. Toy construction piece or similar article. 227,023, 5–29–73, Cl. D34—15.

Behm, John, to National Silver Co. Skillet-grill, or similar article. 227,028, 5–29–73, Cl. D44—1.

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Broadhead, Reginald M., to Drum Horse Distillers Ltd. Combined bottle and cap therefor. 227,002, 5–29–73, Cl. D9—72.

Cambridge Instrument Co., Inc.: *See*—
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Catron, Robert. Hoop toy. 227,025, 5–29–73, Cl. D34—15.

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Constable, Eugene J., to Mohasco Industries, Inc. Bean bag chair. 226,995, 5–29–73, Cl. D6—26.

Constable, Eugene J., to Mohasco Industries, Inc. Chair. 226,998, 5–29–73, Cl. D6—71.

Davis, Harry L., and P. C. Swing; said Davis assignor to United States of America, Army. Stretcher pan for administering inhalation therapy. 227,039, 5–29–73, Cl. D83—1.

Dembar, Robert H., to Graphicana Corp. Combined display cube and stand therefor. 227,001, 5–29–73, Cl. D6—235.

Demetreon, James. Adjustable hot tray lifter. 227,029, 5–29–73, Cl. D44—4.

Derby, Dan R., and R. W. Knodt, to Xerox Corp. Document feeder for a xerographic reproduction machine. 227,034, 5–29–73, Cl. D61—1.

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Edwards, Peter H., H. R. Geiger, and W. B. Ireland, to Multicon Properties, Inc. Multiple unit-townhouse. 227,007, 5–29–73, Cl. D13—1.

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Graham, Bette C., to Liquid Paper Corp. Jar. 227,003, 5–29–73, Cl. D9—141.

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Jenkins, Glen B. Display stand. 226,996, 5–29–73, Cl. D6—186.
Jessen, George N. Elevating desk. 226,999, 5–29–73, Cl. D6—156.
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Laitinen, Hanno V. S., to Oy Polykem AB. Design for a house. 227,006, 5–29–73, Cl. D13—1.
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Link, Martin, to Johnson & Johnson, Surgical scrub tray. 227,041, 5–29–73, Cl. D83—10.
Liquid Paper Corp.: *See*—
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Shirai, Kazunari, F. Takaragi, and S. Matsuda, to Nippon Telegraph and Telephone Public Corp. Telephone or similar article. 227,016, 5–29–73, Cl. D26—14.
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1 3,736,156
3,736,157
42 3,736,158
56 3,736,159
57 3,736,160
58 3,736,161
99 3,736,162
120 3,736,163
213 3,736,164
288B 3,736,165

CLASS 108
53 3,735,713

CLASS 109
59 3,735,714

CLASS 112
79R 3,735,715
110 3,735,716
220 3,735,717
235 3,735,718

CLASS 113
116H 3,735,719
118D 3,735,720

CLASS 114
.5T 3,735,721
235R 3,735,722

CLASS 116
124B 3,735,723
132 3,735,724

CLASS 117
36.2 3,736,168
36.8 3,736,166
37R 3,736,167
46CG 3,736,169
47A 3,736,170
62 3,736,171
95 3,736,172
100C 3,736,173
102M 3,736,174
107.1 3,736,175
124A 3,736,176
138.8N 3,736,177
157 3,736,178
201 3,736,179
217 3,736,180
234 3,736,181

CLASS 118
7 3,735,725
24 3,735,726
48 3,735,727
49 3,735,728
50 3,735,729
205 3,735,730
220 3,735,731
230 3,735,732
261 3,735,733

CLASS 119
1 3,735,734
3,735,735
2 3,735,736
4 3,735,737
5 3,735,738

CLASS 123
8.09 3,735,739
26 3,735,740
56C 3,735,741
102 3,735,742
117A 3,735,743

141 3,735,744
182 3,735,745
193P 3,735,746

CLASS 124

11A 3,735,747
12 3,735,748

CLASS 126

20 3,735,749
197 3,735,750

CLASS 127

24 3,736,182

CLASS 128

2F 3,735,751
2.08 3,735,752
2.1E 3,735,753
24A 3,735,755
3,735,756
25R 3,735,754
36 3,735,757
82 3,735,758
3,735,759
216 3,735,760
218M 3,735,761
305 3,735,762
322 3,735,763
328 3,735,764
335 3,735,765
419D Re.27,652
419P 3,735,766

CLASS 131

25 3,735,767

CLASS 132

9 3,735,768

CLASS 134

33 3,736,183

CLASS 136

6LN 3,736,184
30 3,736,185
83R 3,736,186
86B 3,736,187
90 3,736,188
132 3,736,189
133 3,736,190
135S 3,736,191

CLASS 137

13 3,735,769
3,735,770
15 3,735,771
3,735,772
74 3,735,773
155 3,735,774
318 3,735,775
359 3,735,776
514.5 3,735,777
604 3,735,778
624.2 3,735,779
625.48 3,735,781
625.69 3,735,780

CLASS 138

39 3,735,782

CLASS 139

123 3,735,783

CLASS 140

93.2 3,735,784

CLASS 141

20 3,735,785

CLASS 144

2Z 3,735,786
133R 3,735,787
309AC 3,735,788

CLASS 146

36 3,736,195

CLASS 148

1.5 3,736,192
175 3,736,193

CLASS 149

19 3,736,194
48 3,736,196

CLASS 152

217 3,735,789
352 3,735,791
361 3,735,790

CLASS 156

6 3,736,374
14 3,736,197
65 3,736,198
71 3,736,199
85 3,736,200
145 3,736,201
172 3,736,202
189 3,736,203
242 3,736,204
291 3,736,205
293 3,736,206
294 3,736,207
361 3,736,208
431 3,736,210
435 3,736,209
441 3,736,211
517 3,736,212
570 3,736,213

CLASS 159

4CC 3,735,792
28P 3,735,793

CLASS 160

135 3,735,794
348 3,735,795

CLASS 161

18 3,736,214
36 3,736,215
62 3,736,216
143 3,736,217
147 3,736,219
156 3,736,220
162 Re.27,644
164 3,736,218
170 3,736,221
182 3,736,222

CLASS 162

4 3,736,223
65 3,736,224

CLASS 164

23 3,735,796
72 3,735,797
94 3,735,798
147 3,735,799
250 3,735,800
273 3,735,801
278 3,735,802
281 3,735,803
282 3,735,804

CLASS 165

12 3,735,805
32 3,735,806
47 3,735,807
69 3,735,808
103 3,735,809
142 3,735,810
160 3,735,811

CLASS 166

183 3,735,813
217 3,735,814
313 3,735,815

CLASS 172

44 3,735,816
532 3,735,817
785 3,735,818

CLASS 173

21 3,735,819
78 3,735,820
104 3,735,821
118 3,735,822
119 3,735,823

CLASS 174

11R 3,736,364
15C 3,736,365
34 3,736,366
52S 3,736,367

CLASS 175

213 3,735,824
228 3,735,825
3,735,826
296 3,735,827
299 3,735,828

CLASS 176

40 3,736,225
50 3,736,226
78 3,736,227

CLASS 178

5.1 3,736,368
3,736,369
5.4CD 3,736,371
5.4R 3,736,370
3,736,372
6 3,736,373
6.8 3,736,375
3,736,376
7.2 3,736,377
7.3S 3,736,378

CLASS 179

2C 3,736,379
6E 3,736,380
15AQ 3,736,381
18BE 3,736,382
18HA 3,736,383
100.2CH 3,736,385
175 3,736,387
3,736,388
175.3 3,736,386
186E 3,736,384

CLASS 180

9.44 3,735,829
9.5 3,735,830
19R 3,735,831
79.2R 3,735,832
112 3,735,833
3,735,834
114 3,735,835

CLASS 181

24 3,735,836
33GE 3,735,837

CLASS 182

15 3,735,838

CLASS 185

29 3,735,839
39 3,735,840

CLASS 188

5 3,735,841
67 3,735,842
72.1 3,735,843
181T 3,735,844

CLASS 191

32 3,735,845
48 3,736,389

CLASS 192

35 3,735,847
53A 3,735,846
108 3,735,849

CLASS 193

35R 3,735,848

CLASS 195

28N 3,736,228
28R 3,736,229
36P 3,736,230
63 3,736,231
65 3,736,232

CLASS 197

82 3,735,850

CLASS 198

16R 3,735,851
19 3,735,852
20 3,735,853
24 3,735,854
33AB 3,735,855
58 3,735,856
155 3,735,857
195 3,735,858
220BG 3,735,859

CLASS 200

11DA 3,736,390
38R 3,736,391
61.27 3,736,392
82D 3,736,393
158 3,736,394
159A 3,736,395
166BH 3,736,396
169PB 3,736,397

CLASS 201

17 3,736,233

CLASS 202

185R 3,736,234
236 3,736,235

CLASS 203

51 3,736,236

CLASS 204

28 3,736,237
105R 3,736,238
108 3,736,239
159.18 3,736,240
159.22 3,736,241
192 3,736,242
196 3,736,243
243R 3,736,244
266 3,736,322
298 3,736,246
302 3,736,245

CLASS 206

16A 3,735,860
45.11 3,735,861
46Z 3,735,862
53 3,735,863
56AC 3,735,864
58 3,735,865

CLASS 208

10 3,736,250
11 3,736,247
46 3,736,248
80 3,736,249
143 3,736,251
255 3,736,252

CLASS 209

73 3,735,866
74R 3,735,867
169 3,735,868
211 3,735,869

CLASS 210

27 3,736,253
45 3,736,255
51 3,736,254
138 3,735,870
167 3,735,871
3,735,872
415 3,735,873
430 3,735,874

CLASS 211

7 3,735,875

CLASS 212

39R 3,735,876

CLASS 213

75R 3,735,877
162 3,735,878

CLASS 214

6DK 3,735,880
14 3,735,879
152 3,735,881
332 3,735,882
454 3,735,883
515 3,735,884
520 3,735,885
730 3,735,886

CLASS 215

9 3,735,887
11B 3,735,888
41 Re.27,648
3,735,889

CLASS 217

61 3,735,890

CLASS 219

10.55 3,736,398
3,736,399
60A 3,736,400
98 3,736,401
121LA 3,736,402
131F 3,736,403
203 3,736,404
216 3,736,406
270 3,736,405
492 3,736,407

CLASS 220

26S 3,735,891
54 3,735,892
3,735,893
3,735,894
63R 3,735,895
97D Re.27,649

CLASS 221

210 3,735,896

CLASS 222

16 3,735,897
49 Re.27,645
129H 3,735,898
135 3,735,899
145 3,735,900
196 3,735,901
363 3,735,902
402.16 3,735,903
412 3,735,904
521 3,735,905
567 3,735,906

CLASS 226

150 3,735,907

CLASS 227

67 3,735,908
86 3,735,909

CLASS 228

2 3,735,910
19 3,735,911
28 3,735,912

CLASS 229

6R 3,735,913
17B 3,735,915
17R 3,735,914
27R 3,735,916
44R 3,735,917
62 3,735,918

CLASS 232

17 3,735,919

CLASS 233

46 3,735,920

CLASS 235

30 3,736,408
58P 3,735,921
61.11E 3,736,410
61.6R 3,736,409
151 3,736,411
155 3,736,412
156 3,736,413
181 3,736,414
193 3,736,415

CLASS 236

66 3,735,922

CLASS 238

10E 3,735,923

CLASS 239

15 3,735,924
3,735,925
16 3,735,926
267 3,735,928
341 3,735,929
419.5 3,735,930
585 3,735,927

CLASS 240

46.21 3,736,416
78R 3,736,417
108R 3,736,418

CLASS 241

24 3,735,931
60 3,735,932
236 3,735,933

CLASS 242

54R 3,735,934
68.3 3,735,935
71.1 3,735,936
71.2 3,736,015
75.2 3,735,937
83 3,735,938
198 3,735,939
199 3,735,940

CLASS 244

1SS 3,735,942
3,735,943
3.15 3,735,944
17.19 3,735,945
54 3,735,946
119 3,735,947
122A 3,735,948
155A 3,735,949

CLASS 246

182A 3,736,420

CLASS 248

62 3,735,950
340 3,735,951
358R 3,735,952

CLASS 249

28 3,735,953
91 3,735,954

CLASS 250

43.5R 3,736,421
49.5PE 3,736,422
49.5ZC 3,736,424
49.5D 3,736,423
49.5T 3,736,425
51.5 3,736,426
71G 3,736,428
71R 3,736,427
71.5R 3,736,429
83.3R 3,736,430
205 3,736,431
218R 3,736,433
222PC 3,736,432

CLASS 251

303 3,735,955
315 3,735,956
330 3,735,957

CLASS 252

18 3,736,256
62.1 3,736,257
89 3,736,259
184 3,736,258
188.3R 3,736,260
305 3,736,261
313R 3,736,262
408 3,736,263
429R 3,736,264
445 3,736,265
447 3,736,266
466J 3,736,267
500 3,736,268
518 3,736,269
3,736,270

CLASS 254

2R 3,735,958

CLASS 259

7 3,735,959
8 3,735,960
72 3,735,961
3,735,962
3,735,963
75 3,735,964

CLASS 260

R 3,736,349
2.3 3,736,271
2.5BB 3,736,272
2.5B 3,736,273
17R 3,736,274
17.3 3,736,275
19EP 3,736,276
21 3,736,279
22CB 3,736,278
22EP 3,736,277
22A 3,736,280
27R 3,736,281
29.4UA 3,736,284
29.6MQ 3,736,282
3,736,283
29.6RW 3,736,286
29.6TA 3,736,287
29.6R 3,736,285
33.4R 3,736,288
46.05E 3,736,290
47R 3,736,291
57R 3,736,292
61 3,736,293
75NH 3,736,295
75M 3,736,294
77.5AQ 3,736,296
77.5NC 3,736,298
77.5C 3,736,297
78R 3,736,299
78.4E 3,736,300
79 3,736,301
79.3MU 3,736,302
79.3M 3,736,303
80.78 3,736,305
85.5R 3,736,304
87.1 3,736,306
88.2R 3,736,307
88.3A 3,736,308
88.7R 3,736,309
3,736,310
91.3PV 3,736,311
94.2T 3,736,312
210E 3,736,313
211.5R 3,736,314
239BD 3,736,315
239.1 3,736,318
239.3B 3,736,316
239.55R 3,736,317
240R 3,736,319
240.6 3,736,321
248NS 3,736,320
293.59 3,736,324
293.61 3,736,323
295.5B 3,736,325
3,736,326
296H 3,736,327
302SD 3,736,328
302R 3,736,329
306.8R 3,736,330
309 3,736,331
310R 3,736,332
329ME 3,736,333
335 3,736,334
340.5 3,736,338
340.9 3,736,335
343.3 3,736,337
345.7 3,736,336
347.3 3,736,339
397.25 3,736,340
405 3,736,341
448AD 3,736,342
455A 3,736,343
463 3,736,344
465D 3,736,345
465.6 3,736,346
469 3,736,347
471R 3,736,350
475R 3,736,348
501.21 3,736,351
523A 3,736,353
530N 3,736,354
533N 3,736,355
543R 3,736,352
562R 3,736,356
570.5P 3,736,357
837R 3,736,289

CLASS 266

3R 3,735,966
3,735,967
24 3,735,968
3,735,969
27 3,735,970

CLASS 267

182 3,735,971

CLASS 269

228 3,735,972
296 3,735,973

CLASS 270

31 3,735,974
61F 3,735,975

CLASS 271

75 3,735,977
88 3,735,978
94 3,735,976

CLASS 272

58 3,735,979
70.1 3,735,980
73 3,735,981

CLASS 273

1E 3,735,982
3,735,983
86E 3,735,984
105.4 3,735,985
134G 3,735,986
143R 3,735,987
178B 3,735,988

CLASS 274

4B 3,735,989

CLASS 277

8 3,735,990
27 3,735,991
215 3,735,992

CLASS 279

1B 3,735,993
1G 3,735,994

CLASS 280

11.35T 3,735,995
35 3,735,996
36C 3,735,997
106T 3,735,998
124F 3,735,999
3,736,000
3,736,001
3,736,002
3,736,003
150AB 3,736,004

150C 3,736,005

CLASS 283

6 3,736,006

CLASS 285

31 3,736,007
342 3,736,008

CLASS 287

54C 3,736,009
62 3,736,010
103A 3,736,011
189.35 3,736,013
189.36A 3,736,012

CLASS 292

256.5 3,736,014
281 3,736,016
317 3,736,017

CLASS 294

88 3,736,018

CLASS 296

23MC 3,736,019
63 3,736,020

CLASS 297

42 3,736,021
118 3,736,023
217 3,736,024
369 3,736,025
379 3,736,026
453 3,736,022
3,736,027

CLASS 299

25 3,736,028

CLASS 301

39R 3,736,029

CLASS 303

6C 3,736,030
3,736,031

CLASS 305

34 3,736,032

CLASS 307

10R 3,736,435
88TE 3,736,436
93 3,736,437
130 3,736,438
135 3,736,439
140 3,736,440
149 3,736,441
228 3,736,442
235R 3,736,434
252 3,736,443
290 3,736,444
308 3,736,445

CLASS 308

10 3,736,033
137 Re.27,651
213 3,736,034

CLASS 310

8 3,736,446
11 3,736,447
15 3,736,448
171 3,736,449
178 3,736,450

CLASS 311

18D 3,736,468

CLASS 312

107 3,736,035
285 3,736,036
351 3,736,037

CLASS 313

32 3,736,451
115 3,736,452
146 3,736,453
243 3,736,454
274 3,736,455
278 3,736,456
313 3,736,457
344 3,736,458

CLASS 315

11 3,736,459
3,736,460
12 3,736,461
84.6 3,736,462
209SC 3,736,463
209T 3,736,464
239 3,736,465

CLASS 316

26 3,736,038

CLASS 317

11A 3,736,466
3,736,467
22 3,736,469
27R 3,736,470
101DH 3,736,472
101D 3,736,471
137 3,736,473
234R 3,736,474
3,736,475
3,736,476
235R 3,736,477
3,736,478

CLASS 318

51 3,736,480
245 3,736,479
331 3,736,481
338 3,736,482
469 3,736,483
587 3,736,484
594 3,736,485
624 3,736,486
696 3,736,487
3,736,488

CLASS 320

35 3,736,489
39 3,736,490

CLASS 321

14 3,736,491
45R 3,736,492
3,736,493
3,736,494

CLASS 323

17 3,736,495
22T 3,736,496
80 3,736,497

CLASS 324

29.5 3,736,498
34R 3,736,499
3,736,500
37 3,736,501
43R 3,736,502
51 3,736,503
74 3,736,504
133 3,736,505
158R 3,736,506

CLASS 325

30 3,736,507
38B 3,736,508
134 3,736,510
143 3,736,509
321 3,736,511
363 3,736,512
421 3,736,513

CLASS 328

55 3,736,514
134 3,736,516
143 3,736,515
167 3,736,517

CLASS 330

4 3,736,518
18 3,736,519
29 3,736,520
35 3,736,521
3,736,522

CLASS 331

64 3,736,523
94.5 3,736,524
3,736,525
3,736,526
107S 3,736,527
143 3,736,528

CLASS 332

18 3,736,529

CLASS 333

3,736,530
3,736,531
30R 3,736,532
30 3,736,533
31A 3,736,535
31R 3,736,534
73R 3,736,536

CLASS 335

135 3,736,537
160 3,736,538
216 3,736,539
279 3,736,540

CLASS 336

70 3,736,542
84 3,736,541
200 3,736,543

CLASS 337

282 3,736,544

CLASS 338

13 3,736,545
15 3,736,546

CLASS 339

14R 3,736,547
31R 3,736,548
75MP 3,736,549
265F 3,736,550

CLASS 340

3R Re.27,650
5MP 3,736,552
5R 3,736,551
6S 3,736,553
7R 3,736,554
8 3,736,555
15.5EC 3,736,556
16R 3,736,557
18LD 3,736,558
27R 3,736,559
53 3,736,560
147P 3,736,561
149R 3,736,562
172.5 3,736,563
3,736,564
3,736,565
3,736,566
3,736,567
3,736,568
3,736,569
173CR 3,736,571
173DR 3,736,572
173R 3,736,570
3,736,573
3,736,574
3,736,575
174EB 3,736,419
174HA 3,736,578
174PW 3,736,576
174TF 3,736,577
3,736,579
174.1A 3,736,581
174.1H 3,736,582
174.1J 3,736,580
240 3,736,583
258A 3,736,584
324R 3,736,585
347NT 3,736,586
351 3,736,587
378R 3,736,588

CLASS 343

17.1R 3,736,589
103 3,736,590
702 3,736,591
854 3,736,592

CLASS 346

74MT 3,736,046
75 3,736,593
139C 3,736,594

CLASS 350

3.5 3,736,039
3,736,040
87 3,736,041
95 3,736,042
160LC 3,736,047
160R 3,736,043
161 3,736,044
3,736,045
186 3,736,048
214 3,736,049
289 Re.27,653
316 3,736,050

CLASS 352

72 3,736,051
166 3,736,052

CLASS 355

3 3,736,053
8 3,736,056
13 3,736,054
14 3,736,055

CLASS 356

4 3,736,057
3,736,058
86 3,736,059
124 3,736,060
141 3,736,061
153 3,736,062
160 3,736,063
195 3,736,064
239 3,736,065

CLASS 404

117 3,736,066

CLASS 408

79 3,736,067

CLASS 415

89 3,736,068
115 3,736,069
147 3,736,070

CLASSIFICATION OF DESIGNS

D 6— 26 226,995
61 226,997
71 226,998
156 226,999
186 226,996
189 227,000
235 227,001
227,001
D 9— 72 227,002
141 227,003
219 227,004
D13— 1 227,005
227,006
227,007
D16— 227,008
D22— 25 227,009
D23— 57 227,010
146 227,011
165 227,012
D26— 14 227,013
227,014
227,015
227,016
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